

**AIR QUALITY
MANAGEMENT PLAN
APPENDIX IV-G**

**TRANSPORTATION
LAND USE &
ENERGY CONSERVATION
MEASURES**

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ADDENDUM

TRANSPORTATION, LAND USE AND ENERGY CONSERVATION MEASURES

SUMMARY OF CHANGES TO DRAFT APPENDIX IV - G

The following changes have been made to the draft Appendix IV-G since its release on September 9 1988.

Executive Summary

- o The Executive Summary and the remainder of the Plan have been updated with information from the latest drafts of the Regional Mobility Plan, the Growth Management Plan and the Regional Housing Needs Assessment.
- o A significant change was made in the size of the total financial package for the preferred RMP strategy. This package now contains capital expenditures of \$44 billion of which \$21 billion has been identified as available (Constrained scenario). The previous figures were \$42 billion and \$13 billion respectively.

Chapter I. Introduction

- o The implementation section of the introductory chapter was amended to include a reference to on-going funding of transportation-related air quality planning from Caltrans, FHWA and EPA.
- o Also in the same section, use of the phrase "local government ordinances" is interpreted to include all regulatory tools at the disposal of local governments to achieve trip reduction targets.

Chapter II. Transportation Control Measures

General:

- o The number of Transportation Control Measures decreased from 26 to 25. Highway Electrification and Automation, for which there were no assumed emission reduction benefits for the next twenty years, was moved to further study. The remaining measures were renumbered.
- o A cover sheet summarizing common information was provided for the following groups of interacting transportation measures:

Alternative Work Schedules and Locations,
Mode Shift Strategies,
Goods Movement, and
Paved and Unpaved Roads and Parking Lots.

Items, such as implementation assumptions, transportation indicators, and emission benefits, have been moved to the respective cover sheet for each group, and no longer appear in measure texts. This was done to prevent the tendency of the reader to duplicate benefits and to remove ambiguities related to span of implementation for Tier I.

o Changes to individual measures are summarized below:

1a. Alternative Work Schedules and Locations:

A new control method has been added requiring SCAG to establish an outreach program to promote awareness of growth and mobility issues and possible solutions. A corresponding bullet has also been added to the commitment schedule matrix.

1b. Telecommunications:

The control method requiring local ordinance on satellite work centers was deleted.

The following were added:

a. specific inclusion of work at home and part time telecommuting,

b. request for local government support in zoning ordinances for reasonable home occupations,

c. language allowing employers flexibility in choosing appropriate combination of trip reduction strategies based upon their individual circumstances, and

d. recognition of need for research on net energy use impacts of work at home.

2a. Additional steps were added to Control Methods to gradually decrease the applicable size of employer from 100 to 25 employees.

2c. A new control method was added requiring a vanpool tax credit, inclusion of vanpooling in local ordinances, and preferential parking privileges for vanpools. The new control method was also added to the commitment schedule matrix.

2e. Analysis of local applicability, costs and consultation with affected parties has been emphasized.

2f. The amount of needed High Occupancy Vehicle facilities, as called for by the updated RMP draft, has changed from 983 lane-miles to 1285 lane-miles.

3a. Under Control Methods (text) the ban on trucks during peak periods has been changed to restriction.

New sections on Implementation Issues and Other Impacts have been added for consistency with other measures.

4. Metering of all 600 freeway ramps is now under Tier I actions to be implemented during the first five years. The synchronization of 8000 signals and channelization of 500 intersections continues to be split 25% in Tier I and 75% in Tier II.
6. On the commitment schedule matrix, the check (###) on zoning has been removed. Checks have been inserted on business licenses and on lease agreements.
7. The same matrix change as on measure #6.
8. The same matrix change as on measure #6. A check for general plans was added.

In the Control Methods section under the Ground Access Improvement Plan, the last point now includes incentives for provision of clean fuel-burning private airport shuttle/paratransit services.

- 12a. The title of this measure has been changed from Storage and Movement of Fine Particulate Materials to Paved Roads.

Trucks will be required to maintain the distance between the top of the load and the top of the truck bed sides;

By January 1, 1990, local governments will be required to adopt a "construction carryout" (soil transported from construction sites to paved roadways by vehicles) ordinance which requires the installation of truck wheel washers at the entrance of constructions sites; the access road to be paved; and the developer of a construction site to clean up the public roadway if necessary.

By January 1, 1990, local governments will be required to adopt a "vehicle entrainment" (soil transported from unpaved areas to paved areas) ordinance which requires either the paving, curbing or vegetative stabilization of the unpaved areas adjacent to roadways where vehicles could potentially drive.

By January 1, 1990, local governments, Caltrans, and the sanitation districts will be required to begin allocating resources to implement the vehicle entrainment ordinance for the areas for which they are responsible and for storm water control.

- 12b. A menu of control options has been developed for use on unpaved roads and areas where it is demonstrated that paving is not the most cost effective method due to low vehicle miles traveled, or where paving will impact water absorption rates, drainage patterns, and the amount of surface run-off or cause some other significant environmental impact. This permits the jurisdictions to

tailor the ordinances to reflect the characteristics of the areas.

13. The title of this measure has been changed from Freeway Capacity Enhancements to Freeway and Highway Capacity Enhancements.

Control Methods in the summary are reformatted to conform to the HOV facilities measure (2f).

Construction of facilities has been changed from 800 lane-miles to 1840 lane-miles to reflect coverage of highways as suggested by the change in the title.

15. The Implementation Assumptions section revision acknowledges the differences in the assumptions made in this measure (5.5% passenger vehicle fleet penetration) versus SCAQMD Appendix IV-A p. II-2 (40%, inclusive of other clean fueled vehicle penetration).

Chapter III. Land-Use Control Measures

17. (Formerly 18.)

The state Housing and Community Development Agency abbreviation was corrected to read "state HCD" instead of "state HCB".

The Control Methods summary and text have been modified to be consistent with the latest draft of the Growth Management Plan, to add emphasis on attaining a subregional level of job/housing balance.

Further in the same section, roles of agencies, such as Southern California Association of Governments, County Transportation Commissions, Air Quality Management District and State Housing and Community Development are spelled out.

Chapter IV. Energy Conservation Control Measures

- 18a. (Formerly 19a.)

A new paragraph has been added to the Implementation Issues section, stating that the wide variance in the degree of prior local government efforts in implementing energy conservation should be considered.

- 18b. (Formerly 19b.)

In the Control Methods section, the first point now relates to solid waste from all sectors, not just from the residential sector.

A 10% tax credit was added for industries utilizing recycled material.

The Background and Regulatory History section provides an update on AB 3298 (vetoed 9/23/88), and SB 188 (provides the above stated 10% tax credit.)

The Other Impacts section adds a paragraph to describe the impact of paper de-inking and recycling process on wastewater generation.

18c. (Formerly 19c.)

In the Control Methods section, the requirement for the California Energy Commission to enact mandatory commercial sector energy building standards has been deleted because they have already implemented it.

Under Implementation Assumptions, the fuel consumption reduction target has been doubled to 30%. Consequently, the NOx emission reduction targets have increased from 6 tons/day to 11.57 tons per day.

More background information has been provided on CEC analysis of energy efficiencies and reduction targets for fuel consumption.

Chapter V. Air Quality Benefits

- o The air quality benefit calculations have been updated to reflect changes to control measures. The change was negligible.

Chapter VI. Methodology

- o Information on the number of intrazonal trips as a percent of interzonal trips has been provided in the methodology section. This was necessary because the trips reported in the Regional Mobility Plan do not include intrazonal trips, while they contribute to emissions and are included in the Air Quality Management Plan calculations.

Chapter VII. Monitoring (Formerly Future Study Issues Chapter.)

- o The Monitoring section has been revised based on discussions with EPA, ARB and SCAQMD and is now incorporated as a separate chapter. The monitoring section has not been changed since the Executive Committee reviewed the document on November 3.

Chapter VIII. Conformity

- o The Conformity section has also been revised based on discussions

with EPA, ARB and SCAQMD and incorporated as a separate chapter. The conformity section has been modified, as follows:

- a. A five page summary has been added which describes the federal requirements for conformity, the policies and objectives of the conformity process, and the conformity review process.
- b. A table has been developed which specifies the conformity criteria for each component (General Development, Transportation, Wastewater Treatment, and Local Government Implementation) based on input from SCAG Environmental Planning and Transportation Departments Staff, EPA, ARB, the Transportation and Communications Committee, the Planning Directors Committee, the Energy and Environment Committee, the Community Economic, and Human Development Committee, and the AQMP Working Group.
- c. The A-95 Clearinghouse minimum criteria for projects that are considered regionally significant has been attached, and the definition of a major capital expenditure will be developed to distinguish which projects are subject to conformity review.

Chapter IX. Future Study Issues

The Future Study Issues chapter has been revised and expanded. Now there are five sections.

- o After moving Monitoring and Conformity to separate chapters, there remain the sections on Additional Measures, Cost/Benefit Analysis and Air Quality Elements. The Highway Electrification and Automation measure has been moved to future study under Additional Measures section.
- o Two new sections have been added to the Future Study Issues Chapter. One describes the task force process and the other describes a menu of potential Time of Day, Seasonal and Place controls.



600 South Commonwealth Avenue • Suite 1000 • Los Angeles • California • 90005 • 213/385-1000

September 9, 1988

To Interested Parties:

Based on your review and comment, SCAG's Transportation, Land-Use and Energy Conservation control measures, have been significantly revised to:

- o shift from a dependence on regionwide regulation by the SCAQMD to actions by local governments;
- o identify local government implementation actions for the first five years; and
- o identify facility improvements that can be realistically funded by 2010.

We look forward to your further review and comments on the revised document, the full Draft Air Quality Management Plan, and the Draft Environmental Impact Report. Your response is requested by October 27, 1988.

Sincerely,

A handwritten signature in dark ink, appearing to read "Don Griffin".

DON GRIFFIN
President & Councilmember
City of Buena Park

DG:miv

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APPENDIX IV-G

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ACRONYMS

| | |
|----------|--|
| ARB | California Air Resources Board |
| AQMP | Air Quality Management Plan |
| EPA | U.S. Environmental Protection Agency |
| SCAQMD | South Coast Air Quality Management District |
| SCAG | Southern California Association of Governments |
| CEC | California Energy Commission |
| Caltrans | California, Department of Transportation |
| VHT | Vehicle Hours Travelled |
| VMT | Vehicle Miles Travelled |
| VT | Vehicle Trips |
| OCTD | Orange County Transit District |
| RFP | Reasonable Further Progress |
| AVR | Average Vehicle Ridership |
| UMTA | Urban Mass Transit Authority |
| CBD | Central Business District |
| HOV | High Occupancy Vehicle |
| CHP | California Highway Patrol |
| LACTC | Los Angeles County Transportation Commission |
| RTD | Southern California Rapid Transit District |
| OCTC | Orange County Transportation Commission |
| RMP | Regional Mobility Plan |
| CTA | California Trucking Association |
| ICTF | Intermodal Container Transfer Facility |
| ITS | International Transportation Service |
| ATSAC | Automated Traffic Surveillance and Control |
| TCM | Transportation Control Measures |
| ROG | Reactive Organic Gases |
| NOx | Nitrogen Oxides |
| SOx | Sulfur Oxides |
| PM10 | Particulate Matter smaller than 10 microns |
| CAA | Clean Air Act |
| NAAQS | National Ambient Air Quality Standards |
| SIP | State Implementation Plan |
| MPO | Metropolitan Planning Organization |
| CEQA | California Environmental Quality Act |
| RSA | Regional Statistical Area |
| MAP | Million Air Passengers |
| BACT | Best Available Control Technology |
| BACM | Best Available Control Measure |
| STOL | Short Take-off and Landing |
| MOU | Memorandum of Understanding |
| JPA | Joint Powers Authority |
| EPRI | Electric Power Research Institute |
| EVDC | Electric Vehicle Development Corporation |
| RPEV | Roadway-Powered Electric Vehicles |
| RWQCB | Regional Water Quality Control Board |
| SCE | Southern California Edison |
| LADWP | Los Angeles Department of Water and Power |
| SCG | Southern California Gas |

EXECUTIVE SUMMARY

INTRODUCTION

Southern California stands at a turning point in its history. The dynamic growth of this region has earned it the status of being the eleventh largest economic center in the world. If the growth trends of the last ten years continue, the region will experience almost a 50% increase in population.

Yet the region is buckling under its own weight. The freeways are known for gridlock, housing prices continue to escalate, and most of the region suffers untenable air pollution.

The linkages between growth, housing, jobs, traffic, and air quality are obvious to all. Less clear is the course of action that will be selected by this region to guide its future development.

The choices for action can be simply stated:

1. Will the region select any set of actions very different from a continuation of past practices?

This question is the starting point of the debate for each of the four critical regional plans now pending--Mobility, Growth Management, Housing, and Air Quality. "Business As Usual" is typically the course of least resistance. However, it also represents a de facto commitment to deterioration.

2. How much new freeway construction will the region seek to accomplish? How much demand management will be pursued?

The Regional Mobility Plan is aimed at achieving the level mobility we experienced in 1984. While the construction costs for new facilities is \$42 billion, the Plan places emphasis on demand management measures which will reduce both vehicle trips and vehicle miles traveled. The measures implemented to reach mobility goals will affect our air quality future.

3. Will the region try to achieve a balance between jobs and housing?

The Regional Growth Management Plan presents the population, housing, and job forecasts for the year 2010. The key choices involve those of distribution. A fundamental assumption is made that local growth control efforts will simply cause the redistribution of the regional totals. In order to improve mobility and air quality, the Growth Management Plan presents a distribution alternative designed to achieve Job/Housing balance in the region.

4. Will the region make a major commitment to alternate sources of energy?

The 1988 Air Quality Management Plan establishes the regional goal of the attainment of the federal clean air standards by the year 2007. In

order to make significant progress towards this goal, especially in light of the dramatic growth forecast for the region, tough control measure choices are presented. The trade-offs between stationary source controls, area source controls and mobile source controls can occur only if a major commitment is made to alternative sources of energy. The regional choices for air quality improvement involve not only the issues of demand management, but even more fundamentally the issues of fuel and power.

PURPOSE OF THIS REPORT

This report presents SCAG's proposed Transportation, Land Use and Energy Conservation Measures for the 1988 Air Quality Management Plan (AQMP). Most of the measures have conceptual ties to the 1979 and 1982 AQMPs. In the past plans, many of these measures were presented as long range study proposals. Today, every measure calls for specific commitments within the near term future.

In the past, the plans stopped shy of actually charting a course to the attainment of the national clean air standards. Programs were proposed to improve the air quality, and, in general, the focus rested on controls on major industries and automobile tailpipe emissions. Today, the price of clean air must include changes in how each resident uses his or her automobile.

In the past, local government's commitment to clean air programs has been less than sterling. Although individual jurisdictions excelled on a number of the programs, clean air was not generally viewed as a high priority issue. Today, more and more of the constituency of the region associates air pollution with traffic congestion. The body politic of Southern California is changing. Relieving traffic congestion goes hand in hand with improving air quality, and both issues are of critical concern to local government.

Through this report, the region can debate its commitment to demand management, job/housing balance, and alternate energy sources. These measures provide significant air quality and mobility benefits.

In broad terms, the AQMP has four components to address: (1) stationary sources, (2) area sources, (3) mobile sources, and (4) fuels. The measures in this report primarily involve mobile sources, with some impact on fuels.

The battle to attain clean air is the toughest challenge facing this region. In the next 20 years, Southern California will see a population increase equivalent to adding the population of the San Francisco Bay area to this region. Growth must be managed from a regionwide perspective and a similar commitment must be made to clean air, as well. In order to attain clean air and avoid gridlock, the region must reduce single occupancy vehicle trips. Any emission reduction that is forgone for one pollution source must be squeezed out elsewhere, and even then, clean air will be dependent upon a major shift to alternate sources of energy.

LINKAGES BETWEEN REGIONAL PLANS

The four regional plans that are directly linked to the debate on the AQMP are:

- o The Regional Mobility Plan;
- o The Growth Management Plan;
- o The Regional Housing Needs Assessment (RHNA); and
- o The Area Wide Waste Treatment Management Plan (208).

The first three of these plans are all being updated on the same schedule as this AQMP. The unifying link between all these plans is the projected population growth for the region.

The 208 Plan stands out as the anomaly in the group. This Plan is not being revised at this time. The existing 208 Plan was adopted in 1979 and is based on a projected population growth for the year 2000 that has already been exceeded. The facility funding and flow permit decisions made pursuant to the 208 Plan are required to be consistent with both the Regional Growth Management Plan (population forecast) and the AQMP. The 208 Plan should be updated as soon as possible, so that all the regional plans proceed along a coordinated course.

The Mobility, Growth and Housing Plans all bring specific program actions to bear on this AQMP. These relationships are briefly described below.

- o **REGIONAL MOBILITY PLAN:** Four alternative strategies for mobility are assessed. Strategy #3 has been endorsed by SCAG's Executive Committee. This preferred strategy calls for:
 - Demand Management Programs which would impact 80% of all work trips;
 - \$42 billion of facility improvements; and
 - Implementation of the Growth Management Plan.
- o **GROWTH MANAGEMENT PLAN:** A total population of 18.3 million is forecasted for the region by 2010. Within the boundaries of the air basin the projected population is 15.5 million. Four alternative distributions of the total regional population are assessed. Growth Management Alternative #4 Modified has been endorsed by SCAG's Executive Committee. This preferred alternative calls for:
 - 9.5% of the **new** jobs to be shifted to housing-rich areas, and
 - 4.2% of the **new** housing units to be shifted to the job-rich areas.

CHART A: LINKAGES BETWEEN REGIONAL PLANS

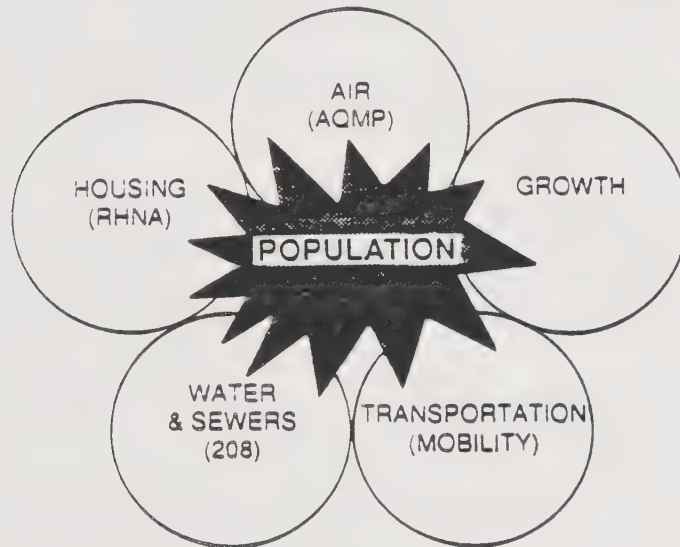
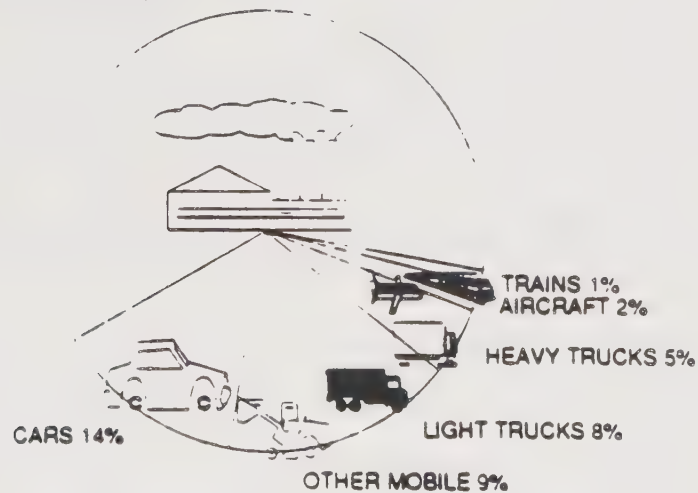


CHART B: YEAR 2010 EMISSION (ROG) SOURCES TOTAL 1154 TONS PER DAY

STATIONARY & AREA 61%



- o **REGIONAL HOUSING NEEDS ASSESSMENT PLAN:** The housing distribution goals from the Growth Management Alternative #4 Modified, are presented as housing needs projections for every city and county in the region. The RHNA Plan establishes:
 - Legally binding five-year targets of housing needs for each jurisdiction.

OVERVIEW OF THE TRANSPORTATION, LAND USE AND ENERGY CONSERVATION MEASURES

The measures have been divided into three chapters: Transportation, Land Use, and Energy Conservation. There are twenty-six Transportation measures, one major Land Use Measure, and three Energy Conservation Measures.

Each measure is described in terms of three Tiers of action.

Tier I contains:

- o Actions to be taken in the first five years, and
- o Transportation improvements which can be built with funds available in the next 20 years.

Tier II contains:

- o Actions to be taken from year 6 to 20, and
- o Actions dependent upon additional funding or new legislative authority.

Tier III contains:

- o Actions tied to future technology.

Most of SCAG's measures fall into the first two Tiers. Throughout all of these measures the Tier I "call for action" is to local government. Should these actions not occur, local government may be preempted by SCAQMD or EPA regulations.

SCAG's Tier I measures provide a net ROG benefit of approximately 12 tons per day. The Tier II measures provide a net ROG benefit of approximately 129 tons per day.

In order to avoid double counting from measures that overlap one another, certain groups of measures were formed. For example, seven measures are grouped together under "Mode Shift," meaning those strategies which lead to a shift from single occupant vehicles to transit or other modes of shared travel. The anticipated emission reductions have been developed assuming an overall percentage of trip reduction.

CHART C: EMISSION (ROG) REDUCTION Transportation Land Use, and Energy Conservation Measures

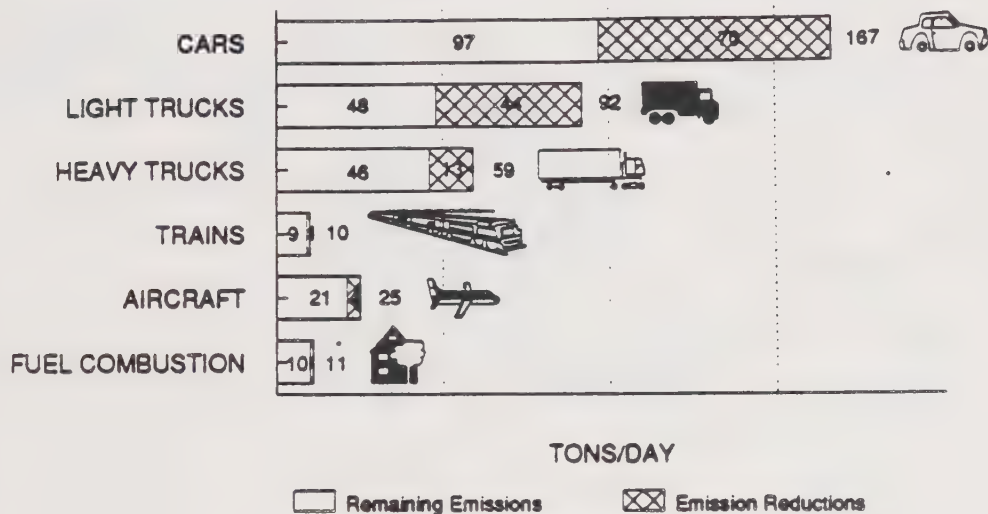
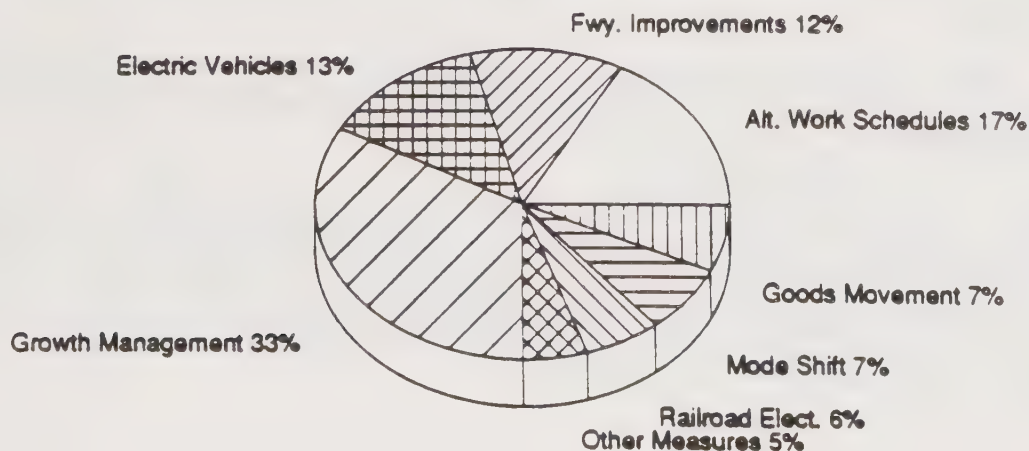


CHART D: SCAG MAJOR MEASURES % ROG REDUCTION (2010) TOTAL 141 TONS PER DAY



Each measure is described in terms of:

- o Source,
- o Control methods,
- o Implementation issues (including funding availability),
- o Implementation agencies,
- o Assumptions on level of implementation in the first five years and to 2010,
- o Emission benefits, and
- o Background information.

MAJOR MEASURES

Although all the measures are important, seven groups of measures stand out in their ability to offer significant reductions:

- o Alternate Work Schedules
- o Mode Shift Strategies
- o Goods Movement
- o Freeway Improvements
- o Rail Electrification
- o Electric Vehicles
- o Growth Management

For the year 2010, these measures represent close to 95% of the total reductions for ROG.

The Paved Road Measures are significant in their impact on PM10.

Chart C illustrates the impact of the SCAG measures on the mobile sources and on fuel combustion. Chart D highlights the impact of the seven major groups of measures.

POLICY QUESTIONS

Each measure proposes a set of actions designed to cause a reduction in emissions. The measures are as explicit as possible; although in many cases, multiple options exist for implementation. In order to project emission benefits, certain assumptions which have been made regarding implementation are called out in each measure.

For many of these measures, the first basic question is "Will the program be implemented by local government and/or by SCAQMD?" In order for the 1988 AQMP to seriously set the course for air quality, strong commitments from local government are necessary.

Table 1 is designed to summarize the Policy Questions for each measure. The table also indicates the assumptions used on level of implementation to the year 2010.

TABLE 1: POLICY QUESTIONS & ASSUMPTIONS
BY MEASURE (to 2010)

| MEASURES | POLICY QUESTIONS |
|--|---|
| TRANSPORTATION MEASURES | ***** |
| 1. Alternative Work Schedules & Locations (Includes 2 measures) | <p>Will 10% of work trips be reduced through alternative work schedules?</p> <p>Will the region reduce an additional 10% of the work trips by telecommuting?</p> |
| 2. Mode Shift Strategies (Includes 7 measures) | <p>Should Regulation XV be expanded down to employers with 25 employees?</p> <p>Should parking fees be used to discourage single occupancy vehicle trips?</p> <p>Should tax incentives be established to encourage vanpools?</p> <p>Should transit incentive programs be expanded to further include retail centers?</p> <p>Should major special event centers (10,000+) be required to provide shuttle services?</p> <p>Is the region willing to construct to an HOV network, i.e., 983 additional miles by 2010?</p> <p>Should transit service be expanded throughout the region?</p> |

ASSUMPTIONS

IMPLEMENTING AGENCIES

Work trips will be reduced by 30%.
Non-worktrips will increase 5%.
Eighty percent (80%) of the com-
mute is affected.

Local Government,
SCAQMD

Adequate HOV and transit facilities
will be provided. Vanpools
increased by 15%. Carpools (+3)
increased by 30%. A reduction
of 1.1 million trips.

Local Government, SCAQMD, Caltrans

MEASURES

POLICY QUESTIONS

TRANSPORTATION MEASURES *****

- | | |
|--|--|
| 3. Goods Movement (Includes 2 measures) | Should truck traffic be re-routed off freeways, and away from central business districts, during peak commute hours? |
| | Should container yards be built at the ports and served primarily by rail? |
| 4. Traffic Flow Improvements | Should the region seek to substantially improve traffic flow and to coordinate flows across jurisdictional boundaries? |
| 5. Nonrecurrent Congestion Relief | Should funding be increased for Caltrans and CHP to improve accident response programs? |
| 6. Aircraft & Ground Service Vehicles | Should airports be required to prepare Emission Reduction Plans for aircraft and ground service vehicles? |

ASSUMPTIONS

IMPLEMENTING AGENCIES

Truck trips will be reduced by
50% during peak commute hours.
Train traffic will increase 7%.

Local Government,
SCAQMD,
Private

Ports of Los Angeles, Long Beach,
Railroads

An additional 600 freeway ramps
will be metered. Over 8000
signals will be synchronized;
and 500 intersections will
be improved.

Local Government
CALTRANS

Annual delay will be reduced
an additional four-fold to 750,000
vehicle hours.

Local Government,
CHP, CALTRANS

Commercial Airport emissions will
be reduced by 10%.

Airport Operators,
SCAQMD

MEASURES

POLICY QUESTIONS

TRANSPORTATION MEASURES *****

- | | |
|--|---|
| 7. Airport Ground Access | Should airports be required to prepare Emission Reduction Plans for passenger and employee vehicle trips? |
| 8. Centralized Ground Power Systems | Should airports be required to provide centralized power and air conditioning for passenger aircraft while at terminal gates? |
| 9. Replacement of High Emission Aircraft | Should all high emitting aircraft be phased out of this basin? |
| 10. General Aviation | Should vapor recovery controls be required for the fueling at general aviation airports? |
| 11. Rail Consolidation Reduce Grade Crossings | Should a consolidated freight train corridor be developed along Alameda Street, from the ports to downtown Los Angeles, and then to San Bernardino? |
| 12. Paved and Unpaved Roads and Parking Lots (Includes 2 measures) | <p>Should paving requirements be increased for rural land divisions?</p> <p>Should liners and covers be required for all trucks hauling fine particulate matter? And should the outside storage of these materials be prohibited?</p> |

ASSUMPTIONS

IMPLEMENTING AGENCIES

Airport traffic will increase to handle 118 million annual passengers. Average vehicle ridership will increase to 1.5, with a resulting savings of 350,000 vehicle miles.

Airport Operators,
SCAQMD

All passenger aircraft will rely on centralized power and air conditioning while at terminal gates by 2010.

Airport Operators
SCAQMD

All permitted aircraft engine types will be Stage III by the year 2010.

Airport Operators, FAA

Phase II vapor recovery systems will be required at all 47 GA Airports, with a system effectiveness of 85%.

Airport Operators/SCAQMD

Rail crossing delays will be reduced 90%, resulting in a 29% reduction in train hours of operation.

New Joint Powers Authority

PM₁₀ will be reduced by 26%.

Local Government, SCAQMD, ARB

MEASURES

POLICY QUESTIONS

TRANSPORTATION MEASURES

13. Freeway Capacity Enhancement

Will the region fund \$4.7 billion
in new freeway facilities?

14. Railroad Electri- fication

Should the high traffic rail lines
be electrified?

15. Electric Vehicles

Should tax incentives and public
and private investments be encouraged
for battery electric vehicles?

16. Highway Electri- fication

Should the region shift its transporta-
tion emphasis from petroleum use to
electricity?

ASSUMPTIONS

IMPLEMENTING AGENCIES

Freeways will be expanded by 875 miles. VMT will be reduced by 5%; and VHT will be reduced by 9%.

CALTRANS

Electrification will reduce line haul emissions by 90%.

Railroads

Electric vehicles will represent: 3% of cars, 12% of vans and 2% of heavy duty vehicles.

SCAQMD, Local & State Government, Utilities Private Industry

No emission reductions are assumed during Plan 20-year time frame.

CALTRANS, SCAQMD

MEASURES

POLICY QUESTIONS

TRANSPORTATION MEASURES

17. High Speed Rail

Should a electric high speed rail line be built between Los Angeles and San Francisco as an alternative to airport expansion?

LAND USE MEASURE

18. Growth Management

Should the region seek to establish contractual agreements between local governments in order to achieve job/housing balance?

ENERGY CONSERVATION MEASURES

19. Energy Conservation (Includes 3 measures)

Will local government increase its commitment to energy conservation?

Should recycling targets be established for glass and paper products?

Should pricing and tax subsidies be established to encourage energy conservation?

ASSUMPTIONS

IMPLEMENTING AGENCIES

High Speed Rail line will be built to accommodate 20 million annual passengers. Ground traffic emissions are reduced by 50%.

New Authority

Job/Housing will affect the location of 9.5% of the new jobs and 4.2% of the new housing units with a resulting VMT reduction of 32.5 million miles.

Local Government,
SCAQMD,
SCAG

Local government will reduce energy use by 30%. Recycling materials, along with pricing and tax subsidies, will decrease fuel consumption by 15%.

Local Government, SCAQMD,
Calif. Energy Commission,
Utilities

AQMP COMMITMENT SCHEDULES




Each measure has a specific set of actions proposed, with specific target dates. The schedule forms on the following pages provide examples of types of actions which can be taken. Appropriate examples are then checked for each measure. The list of examples is not all-inclusive.

The following commitment steps are suggested:

- 1st . . . All governmental units are to act within their authority as an employer and contractor to implement these programs within the first year.
- 2nd . . . All Cities and Counties should adopt Air Quality Elements into their General Plans within the first year and a half. Through these Elements, action programs are to be developed (applicable to said jurisdiction) to further implement these measures.
- 3rd . . . Local Zoning and Business License Ordinances are to be adopted to expand these measures to new and existing developments, in the second and third year.
- 4th . . . Intergovernmental Agreements should be developed as necessary to further implement certain measures.
- 5th . . . Annual performance surveys will be prepared by SCAG. By the end of the fourth year, a cumulative review of local governments' performance will be prepared. The need for additional regional regulation to implement these measures will be assessed at that time. Poor performance may result in preemption.

AQMP COMMITMENT SCHEDULE

MEASURE : 1.a. ALTERNATIVE WORK WEEKS AND FLEXTIME




| COMMITMENT | | | | | |
|------------------------|--|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Local governments, as employers, implement programs for employees to reduce work trips by 10% by January 1, 1990.
- o Local governments adopt or amend trip reduction ordinances to ask for AWS by January 1, 1991.
- o If necessary, Regulation XV expanded or new Indirect Source Rule adopted to include AWS by January 1, 1993.
- o SCAG, SCAQMD, and local governments look at legislation by January 1, 1990 to remove impediments to alternative work schedules in Management bargaining contracts.

AQMP COMMITMENT SCHEDULE

MEASURE : 1.b. TELECOMMUNICATIONS

| COMMITMENT | | | | | |
|------------------------|--|--|-----------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:




- o Local governments, as employers, to adopt a telecommunications program by January 1, 1991 to reduce employee trips by 20%.
- o Local government adoption of a trip reduction ordinance by January 1, 1992, requiring telecommunications strategies.
- o ARB and EPA to promulgate a telecommunications program to reduce state and federal agency employees trips by 20% by January 1, 1992.
- o Under Regulation XV or Indirect Source Regulation adopted by January 1, 1993, require 20% reduction in worktrips through telecommuting.

AQMP COMMITMENT SCHEDULE

MEASURE : 2.a. EMPLOYER RIDESHARE AND TRANSIT

INCENTIVES

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|--|--|-----------------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |







TIER I ACTIONS SUMMARIZED:

- o By ordinance/regulation by July 1, 1990, require trip reduction plan for facilities with tenants employing more than 100 employees.
- o By ordinance/regulation by January 1, 1991, require facilities employing 25 to 99 employees to disseminate information on trip reduction.
- o Evaluate effectiveness of reducing ordinance/regulation employee level threshold to 25+, by 1992.
- o If necessary, SCAQMD to expand Regulation XV to cover businesses with 25 or more employees by January 1, 1994.
- o SCAQMD, SCAG and local government encourage formation of TMAs.

AQMP COMMITMENT SCHEDULE

MEASURE : 2.b. PARKING MANAGEMENT

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|--|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL  | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

Local government to adopt an Air Quality Element into each General Plan by July 1, 1990, which will apply, as appropriate, to the following programs:






- o Establish a surcharge on parking for single occupant vehicles and/or discount for multi-occupant vehicles.
- o Eliminate peak-period on-street parking.
- o Eliminate 100% employer subsidized parking.
- o Require employer-sponsored preferential parking for ridesharers for employers of 100+ employees (short-term) and 25+ employees (long term).

(See measure for additional options.)

AQMP COMMITMENT SCHEDULE

MEASURE : 2.c. VANPOOL PURCHASE INCENTIVES

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### ### | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Legislate favorable tax credits for employers who purchase or lease vans for employee vanpool programs by January 1, 1990.
- o Legislate favorable tax benefits for employees who use employer sponsored vanpools by January 1, 1990.
- o Legislate special tax credits for owner-operators of battery electric powered vanpools by January 1, 1993.
- o Legislate special tax credits for employers who sponsor work-day use of clean-fuel vans by January 1, 1993.

AQMP COMMITMENT SCHEDULE

MEASURE : 2.d. MERCHANT TRANSPORTATION INCENTIVES

| COMMITMENT | | | | | |
|------------------------|---|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS FORGED ↓ | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- Local government adoption by January 1, 1991 of non-work trip reduction ordinance to require major retail centers to offer customer mode-shift travel incentives and provide facilities for non-motorized transportation needs.
- Adoption of SCAQMD Indirect Source regulation by January 1, 1992 to require the above.

AQMP COMMITMENT SCHEDULE

MEASURE : 2.e. AUTO USE RESTRICTIONS

COMMITMENT






| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | <div> <div>↑</div> <div>EXISTING LOCAL GOVERNMENT OPTIONS</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | <ul style="list-style-type: none"> o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | <ul style="list-style-type: none"> o ZONING o BUS. LICENSES | ### ### | | |
| ASSIST | | <ul style="list-style-type: none"> o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | | |
| AGREEMENTS | <div> <div>↑</div> <div>COOPERATIVE PARTNERSHIPS FORGED</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o MOU'S & JPA's | | | |
| LEGISLATION | | <ul style="list-style-type: none"> o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION | <div> <div>↓</div> <div>TOP DOWN CONTROL</div> </div> | <ul style="list-style-type: none"> o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Local government to adopt an Air Quality Element into each General Plan by July 1, 1990, which will identify the local applicability of requiring special event centers to operate park-n-ride and off-site facility lots, requiring auto free zones, requiring street closure during peak periods, and enhancing transit performance.
- o Local government to adopt a local auto free zone ordinance by January 1, 1993 to require the above.
- o If necessary, adoption of SCAQMD Indirect Source Rule for special events centers or expansion of Regulation XV to require the above.

AQMP COMMITMENT SCHEDULE

MEASURE : 2.f. HOV FACILITIES




| COMMITMENT | | | | | |
|------------------------|---|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### | ### | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Implement the Constrained HOV Element of the adopted Regional Mobility Plan. (This project list is based on funding available during the next 20 years.)
- o Secure funding for the Unconstrained HOV Element of the adopted Regional Mobility Plan. (Tier II)

AQMP COMMITMENT SCHEDULE

MEASURE : 2.g. TRANSIT IMPROVEMENTS

| COMMITMENT | | | | | |
|------------------------|--|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### | ### | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |






TIER I ACTIONS SUMMARIZED:

- o Implement the Constrained Transit Improvements in the adopted Regional Mobility Plan. (This project list is based on funding available during the next 20 years.)
- o Secure funding for the Unconstrained Transit Improvements in of the adopted Regional Mobility Plan. (Tier II)

AQMP COMMITMENT SCHEDULE

MEASURE : 3.a. TRUCK DISPATCHING, RESCHEDULING,
AND RE-ROUTING

COMMITMENT







| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHMA | ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### | ### | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Local governments to adopt Air Quality Elements in General Plans by July 1, 1990, to alter truck delivery routes and local delivery schedules.
- o Adopt local government ordinances, MOU's by July 1, 1990.
- o Adopt a SCAQMD Truck Delivery Rule by July 1, 1991 if necessary.
- o Assess needs for Federal regulation to assist in the implementation of this measure.

MEASURE : 3.b. DIVERTING PORT-RELATED TRUCKTRAFFIC TO RAIL

COMMITMENT






| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### | ### | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL  | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Ports of L.A. and Long Beach and railroads to develop plans for the development of on-dock or near dock intermodal container transfer facilities between 1988-1990.
- o Initiate construction of new on-dock yards between 1989-1992.
- o Continue to implement new on-dock or near dock yards between 1993-2010.

AQMP COMMITMENT SCHEDULE

MEASURE : 4. TRAFFIC FLOW IMPROVEMENTS





| COMMITMENT | | | | | |
|------------------------|---|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### ### ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Caltrans, SCAG, Commissions implement ramp meters and HOV by-pass lanes in the Constrained HOV element of the adopted Regional Mobility Plan. (This project list is based on funding available during the next 20 years.)
- o Local government implement Automated Traffic Surveillance and Control (ATSAC) on 1000 intersections (1989-1993).
- o Local government implement projects to improve intersection channelization.

AQMP COMMITMENT SCHEDULE

MEASURE : 5. NONCURRENT CONGESTION

| COMMITMENT | | | | | |
|------------------------|---|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |




TIER I ACTIONS SUMMARIZED:

Design and program improvements from 1989-93.

- o Expand and improve incident response programs: CALTRANS
- o Improve freeway management and enforcement practices: CALTRANS
- o Increase enforcement of codes governing loads and vehicle Safety: CHP
- o Develop and secure funding for OWP Elements: SCAG

AQMP COMMITMENT SCHEDULE





MEASURE : 6. AIRCRAFT AND GROUND SERVICE VEHICLES

| COMMITMENT | | | | | |
|------------------------|--|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Through the adoption a local Airport Operators rule by January 1, 1991, require modification of aircraft operations and procedures, and use of alternative fuels and technologies for ground service vehicles.
- o SCAQMD to adopt an Airport Indirect Source rule by January 1, 1992, where local ordinances have not been adopted or have not been effective.

MEASURE : 7. CENTRALIZED GROUND POWER SYSTEMS

| COMMITMENT | | | | | |
|------------------------|---|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES | ### | | |
| ASSIST | | o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Through adoption of a local Airport Operators rule by January 1, 1991, require use of centralized power and air conditioning systems.
- o SCAQMD to adopt an Indirect Source rule by January 1, 1992, where local ordinances have not been adopted or have not been effective.

AQMP COMMITMENT SCHEDULE

MEASURE : 8. AIRPORT GROUND ACCESS

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | ### | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | ### | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:






- Through the adoption of a local Airport Operators rule by January 1, 1990 or SCAQMD Indirect Source regulation for airports by January 1, 1991, reduce the number of air passenger auto trips generated by airports.
- SCAG, Airport operators, and local governments conduct studies of local airport ground access problems to identify additional solutions by January, 1990.
- Local governments and airport operators work to increase state and federal funding for airport ground access improvements by January, 1992.

AQMP COMMITMENT SCHEDULE

MEASURE : 9. REPLACEMENT OF HIGH-EMITTING

AIRCRAFT

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|--|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |






TIER I ACTIONS SUMMARIZED:

- o Enactment of MOU between airport operators and the L.A. Department of Airports by January 1, 1990.
- o Airport operators encourage the phase out of FAR Part 36 Stage II aircraft and transitioning to all Stage III aircraft by January 1, 1992.

AQMP COMMITMENT SCHEDULE

MEASURE : 10. GENERAL AVIATION VAPOR RECOVERY

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |






TIER I ACTIONS SUMMARIZED:

- o Require vapor recovery systems on fuel and storage tanks by SCAQMD regulation by January 1, 1990.

AQMP COMMITMENT SCHEDULE

MEASURE : 11. RAIL CONSOLIDATION TO REDUCE GRADE
CROSSINGS

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### | ### | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |




TIER I ACTIONS SUMMARIZED:

- o Ports of Los Angeles and Long Beach and local governments establish a joint powers authority by January 1, 1990, to develop consolidated railroad corridor along Alameda Street for Port rail access and between Los Angeles and San Bernardino.
- o Joint Powers Authority to obtain financing.
- o Joint Powers Authority to begin construction of corridor (1991).

AQMP COMMITMENT SCHEDULE

MEASURE : 12.a. STORAGE AND MOVEMENT OF FINE
PARTICULATE MATTER

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|--|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o SCAQMD develop regulation by January 1, 1990, prohibiting outdoor storage of fine particulate matter.
- o ARB enact legislation by January 1, 1990, to require the installation of liners on truck beds and covering of loads for transporting of particulate matter.

AQMP COMMITMENT SCHEDULE

MEASURE : 12.b. UNPAVED ROADS AND PARKING LOTS

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | ### ### | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- ARB to conduct a study of PM10 emissions from paved and unpaved areas by January 1, 1990.
- ARB in collaboration with Caltrans to develop a list of areas that need to be paved in the state by January 1, 1993.
- Amend local government ordinances by January 1, 1994, to require paving of all vehicle maneuvering areas and parking facilities, according to the ARB, Caltrans list.
- All applicable government agencies encouraged to initiate paving of roads, construction of adequate drainage facilities, and installation of automobile and truck wheel washers and curbing.

AQMP COMMITMENT SCHEDULE

MEASURE : 13. FREEWAY CAPACITY ENHANCEMENTS

COMMITMENT






| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|-------------------|-------------------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | <div> <div>↑</div> <div>EXISTING LOCAL GOVERNMENT OPTIONS</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o GENERAL PLANS o RHNA | | | |
| FACILITATE | | <ul style="list-style-type: none"> o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | <ul style="list-style-type: none"> o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | <ul style="list-style-type: none"> o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### ### ### | ### ### ### | |
| AGREEMENTS | <div> <div>↑</div> <div>COOPERATIVE PARTNERSHIPS FORGED</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o MOU'S & JPA's | | | |
| LEGISLATION | | <ul style="list-style-type: none"> o INCREASE \$ o NEW AUTHORITIES | ### | ### | |
| REGIONAL REGULATION | <div> <div>↓</div> <div>TOP DOWN CONTROL</div> </div> | <ul style="list-style-type: none"> o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Caltrans, Transportation Commissions, and SCAG program and implement the Constrained Freeway Element of the adopted Regional Mobility Plan. (This project list is based on funding available during the next 20 years.)
- o Caltrans, Transportation Commissions, and SCAG secure funding for the Unconstrained Freeway Element of the adopted Regional Mobility Plan. (Tier II)

AQMP COMMITMENT SCHEDULE

MEASURE : 14. RAILROAD ELECTRIFICATION

| COMMITMENT | | | | | |
|------------------------|---|--|--------------------|------------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | ### | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | ### | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | | ### | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### ### | ### ### | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Detailed feasibility study by SCAG and SCAQMD of railroad electrification conducted from 1991-1992.
- o Railroads to obtain financing for pilot project from 1993-1995.

AQMP COMMITMENT SCHEDULE

MEASURE : 15. ELECTRIC VEHICLES

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | <div> <div>↑</div> <div>EXISTING LOCAL GOVERNMENT OPTIONS</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o GENERAL PLANS o RHNA | | | |
| FACILITATE | | <ul style="list-style-type: none"> o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | <ul style="list-style-type: none"> o ZONING o BUS. LICENSES | | | |
| ASSIST | | <ul style="list-style-type: none"> o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | ### | |
| AGREEMENTS | <div> <div>↑</div> <div>COOPERATIVE PARTNERSHIPS FORGED</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o MOU'S & JPA's | | | |
| LEGISLATION | | <ul style="list-style-type: none"> o INCREASE \$ o NEW AUTHORITIES | ### | ### | ### |
| REGIONAL REGULATION | <div> <div>↓</div> <div>TOP DOWN CONTROL</div> </div> | <ul style="list-style-type: none"> o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | ### | ### |

TIER I ACTIONS SUMMARIZED:

- o Local governments and SCAQMD to support tax incentives legislation.
- o The SCAQMD to support demonstration of electric vehicles.
- o Commitments from utilities, vehicle manufacturers, and governmental agencies to invest in public/private electric vehicle sale/back and lease/back programs.

AQMP COMMITMENT SCHEDULE

MEASURE : 16. HIGHWAY ELECTRIFICATION AND
AUTOMATION

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|-------------------|------------|------------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | ### ### ### | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | ### ### | ### ### | ### ### |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | ### | ### | ### |

TIER I ACTIONS SUMMARIZED:

- Legislation to support research, development, testing, and demonstration.
- Research and analysis of advanced electric technologies.
- Studies to identify potential of Roadway Powered Electric Vehicles and highway automation.

AQMP COMMITMENT SCHEDULE

MEASURE : 17. HIGH SPEED RAIL

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|------------|------------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | <div> <div>↑</div> <div>EXISTING LOCAL GOVERNMENT OPTIONS</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | <ul style="list-style-type: none"> o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | <ul style="list-style-type: none"> o ZONING o BUS. LICENSES | | | |
| ASSIST | | <ul style="list-style-type: none"> o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | | |
| AGREEMENTS | <div> <div>↑</div> <div>COOPERATIVE PARTNERSHIPS FORGED</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o MOU'S & JPA's | ### | | |
| LEGISLATION | | <ul style="list-style-type: none"> o INCREASE \$ o NEW AUTHORITIES | ### ### | ### ### | |
| REGIONAL REGULATION | <div> <div>↓</div> <div>TOP DOWN CONTROL</div> </div> | <ul style="list-style-type: none"> o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:






- o SCAG, local agencies and Caltrans initiate study by January 1, 1990 to devise agreements to build, fund, and operate rail system.
- o SCAG, local agencies and Caltrans undertake feasibility study by January 1, 1990 to identify new routes and viable funding instruments.

AQMP COMMITMENT SCHEDULE

MEASURE : 18. GROWTH MANAGEMENT JOB/HOUSING

BALANCE

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|-----------------------|------------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | ### ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | ### ### ### | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### ### ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | ### | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | ### ### | |

TIER I ACTIONS SUMMARIZED:




- o Local governments adopt ordinances by July 1, 1990 to attain job/housing balance targets consistent with the Growth Management Plan when adopted.
- o Local governments and Sanitation districts develop interregional agreements by January 1, 1992, to attain job/housing balance targets consistent with the Growth Management Plan, when adopted.
- o SCAG to assess effectiveness of local programs by January 1, 1994, and proceed, if necessary to consider stronger regional programs.

AQMP COMMITMENT SCHEDULE

MEASURE : 19.a. LOCAL GOVERNMENT ENERGY

CONSERVATION

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|--|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES | ### | | |
| ASSIST | | o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### ### | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Adoption of local administrative practices by January 1, 1990, to reduce local government energy demand by 8%.
- o Expand the SB 880 program to allow assistance and funding for special districts.

AQMP COMMITMENT SCHEDULE

MEASURE : 19.b. WASTE RECYCLING

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | <div> <div>↑</div> <div>EXISTING LOCAL GOVERNMENT OPTIONS</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | <ul style="list-style-type: none"> o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | <ul style="list-style-type: none"> o ZONING o BUS. LICENSES | ### ### | | |
| ASSIST | | <ul style="list-style-type: none"> o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | | |
| AGREEMENTS | <div> <div>↑</div> <div>COOPERATIVE PARTNERSHIPS FORGED</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o MOU'S & JPA's | | | |
| LEGISLATION | | <ul style="list-style-type: none"> o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION | <div> <div>↓</div> <div>TOP DOWN CONTROL</div> </div> | <ul style="list-style-type: none"> o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:






- o Local governments adopt ordinances by January 1, 1990, to reduce the amount of local residential solid waste requiring disposal.
- o Adopt SCAQMD rule by January 1, 1990, to require increased consumption of glass cullet and increase use of recycled materials by manufacturers.
- o Seek State legislation by January 1, 1990, to impose a tax on product packaging that reflects the true cost associated with collecting and disposing of the material as waste.

AQMP COMMITMENT SCHEDULE

MEASURE : 19.c. PRICING, TAX, AND SUBSIDY

INCENTIVES

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### ### | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o The CEC enact mandatory commercial sector energy building standards by January 1, 1990.
- o Basin utilities reinstate low interest loans and cash rebates for customers purchasing energy efficient equipment and implementing weatherization by January 1, 1990.
- o Basin utilities adopt a surcharge for excessive energy use in residential and commercial sections by January 1, 1990.
- o Basin utilities seek state and federal legislation for tax credits for implementation of energy conservation measures by January 1, 1990.

AQMP COMMITMENT SCHEDULE

MEASURE : USER FEES
FURTHER STUDY

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | ### | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS FORGED ↓ | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | ### ### | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- SCAG evaluate implementation of user fees, 1989-91.
- Develop demonstration program, 1991-1993.
- Advocate legislation at State level to pursue gas tax funding by 1989.

FUTURE STUDY ISSUES

Five future study issues are identified in this report. Each issue is briefly summarized below.

1. Additional Measures

One measure is proposed for future study, "User Fees." It is anticipated that additional measures may be suggested through the public comment process.

2. Cost/Benefit Analysis

Although costs are identified for a number of measures, a significant amount of additional work is needed in this area. To begin with, many of the stated costs serve mobility objectives and should not be fully attributed as a cost/ton charge for emission reductions.

3. Local Air Quality Elements

SCAG and SCAQMD are developing guidelines for local air quality elements. In addition, the counties of San Bernardino, Riverside, and Orange are in the initial stages of preparing such Elements for their General Plans.

A significant link can exist between this program, AQMP Conformity Review, and the annual Reasonable Further Progress (RFP) audit. The real effectiveness of these elements will depend on how specifically they establish programs that implement the 1988 AQMP.

4. Reasonable Further Progress

The annual RFP audit of local government air quality programs will need to be redesigned to track the commitments called for under the 1988 AQMP.

5. AQMP Conformity Review

A revised AQMP Conformity Review process is proposed. The existing process is expanded to more clearly coordinate the conformity requirements between: A-95 review, transportation and waste treatment planning decisions.

TRANSPORTATION, LAND-USE AND ENERGY CONSERVATION CONTROL MEASURES

1988 Draft Air Quality Management Plan

September, 1988

Southern California Association of Governments

INTRODUCTION

Attainment of the federal pollutant standards will require an aggressive program aimed at reducing emissions from all sources. The Southern California Association of Governments is responsible for the development of transportation, land-use, and energy conservation control measures. These measures primarily affect mobile sources and alternative fuels.

Historically, local government has held the responsibility for implementation of transportation, land-use and energy conservation control measures. Successful implementation of the strategies depends on the level of commitment and action by local governments. However, in 1987, state law was amended to give additional implementation authority for transportation and indirect source controls to the South Coast Air Quality Management District (SCAQMD). This new authority could enhance the implementation of these controls if widespread implementation by local government is not accomplished.

Transportation, land-use and energy conservation measures outlined in this plan were selected based on the 1982 AQMP; SCAQMD Working Paper #4: Short-Range Control Measures, November 1986; the Reasonable Extra Efforts Program (REEP); input from the SCAG AQMP Working Group, 1988; and input from SCAG Environmental and Transportation Planning staff.

There are 30 measures in nineteen groups; twenty-six measures in the area of transportation, one major land use, and three in energy conservation. These measures have been broken into two tiers. The term Tier, as used in the SCAG Appendix on Transportation, Land Use and Energy Conservation measures, is more restrictive than used in the text of the full Plan. In the full Plan, Tier refers solely to availability of technology to implement the measures regardless of time and funding constraints. SCAG Appendix carries this concept further to add timing and funding dimensions to tiers.

Tier I contains those actions, which will take place during the first five years after Plan adoption, between January 1, 1989, and January 1, 1994. Tier II contains those actions which take place to the end of the twenty-year time span of the Plan.

The tiering is also influenced by the availability of funding for Plan implementation. For the RMP facility related measures¹, Tier I in this Appendix is used to denote a "constrained scenario," which is based on funding from sources already available. Tier II in this Appendix denotes an "unconstrained scenario" that requires new funding sources through legislation, various user fees, and the like. For all the rest of the measures, Tier I means a five-year time frame for implementation actions and commitments. Commitments and actions to be made for the remaining 15-year span of the plan period are assumed to be under Tier II. All the measures in this Appendix (except #14, #15, and #16), will be found in Tier I of the full Plan.

TRANSPORTATION MEASURES

The goal of the Transportation Control Measures (TCMs) is to influence transportation choices of mode, time of day, or whether to travel at all. The strategies also address fuel selection and applications of technology to motivate a shift away from petroleum-based fuels.

The measures fall into four categories: demand management, system management, facility improvements, and technology-based.

- 1) Demand management is the effort to change motorists' behavior, and includes such measures as ridesharing and alternative work schedules.
- 2) System management addresses improvements in the transportation system, such as traffic signal synchronization, to make it function more efficiently.
- 3) Facility improvements are capital expenditures for such things as freeway widenings which work to induce free-flowing traffic.
- 4) Technology-based measures rely on the development of new vehicles, fuel, or power systems.

Many transportation strategies also contribute to regional mobility; however, improving mobility has a mixed effect on air quality. Vehicular emissions of reactive organic gases (ROG) and carbon monoxide (CO) are higher at low speeds or idling, while oxides of nitrogen (NOx) emissions increase with higher speeds and acceleration. Thus, TCM's which reduce VMT must be combined with more stringent tailpipe standards and better inspection and maintenance to fully address these three pollutants.

Transportation measures are expected to play an important role in the progress toward attainment in the short term. However, as the shift to alternative fuels accelerates, the impact on emissions from these measures will decline and their primary benefit will be congestion relief.

LAND-USE MEASURE

The goal of the Land-use, or Growth Management, measure is to establish a regionwide effort to alleviate the current imbalance that exists between jobs and available housing. Congestion on the region's freeways is exacerbated by this imbalance, because it leads to long commutes for large numbers of basin residents who must travel between abundant housing in the east to jobs in the west. A shift in future housing and jobs to improve the balance can contribute to shorter trips and lower emissions.

ENERGY CONSERVATION MEASURES

The early impact of energy conservation on emissions will not be large, due to the fact that, in 1988, approximately 80% of the energy consumed in the basin is generated elsewhere. However, attainment of all federal air quality standards will likely require a regionwide shift to full electrification of all transportation and stationary sources. This, combined with significant growth projected for the region to 2010, will lead to a growing need for a concerted local energy conservation effort.

The goal of the three Energy Conservation measures is to stimulate conservation efforts through incentives and new local requirements, and to further reduce emissions by improving the local market for recyclables.

IMPLEMENTATION

The focus for successful implementation of all control strategies is on local government. Each measure contains specific actions and a specific timetable for local jurisdictions to follow.

1. HOV Facilities, Transit Improvements, Freeway Capacity Enhancements.



II. TRANSPORTATION CONTROL MEASURES

1. ALTERNATIVE WORK SCHEDULES AND LOCATIONS

1. a. ALTERNATIVE WORK WEEKS AND FLEXTIME

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SUMMARY

SOURCE CATEGORY: Light Duty Auto/Light and Medium Duty Truck

CONTROL METHODS: TIER I

- o Implement a specific 10% work trip reduction program for local government employees using alternative work schedules by January 1, 1990.
- o Adopt local trip reduction ordinances which require alternative work schedules as a condition of business license renewal and as a permit condition for new development by January 1, 1991.
- o If necessary, expand Regulation XV or adopt an Indirect Source Regulation by January 1, 1992, expanded to require employers to produce a 10% reduction in work trips utilizing alternative work schedules. Rule adoption with effective date no later than January 1, 1993.
- o SCAG, SCAQMD, and local governments look at legislation by January 1, 1990, to remove impediments to alternative work schedules in management bargaining agreements.

TIER II

No additional control methods.

IMPLEMENTING
AGENCIES:

Local Governments, SCAQMD

IMPLEMENTATION ASSUMPTIONS FOR ALL ALTERNATE WORK SCHEDULE STRATEGIES:

Sixty percent of the work force in 2010 will participate in alternate work schedules, 20% of work trips will be reduced by telecommuting.

TIER I

Six percent of total projected emission reductions by January 1, 1994.

TIER II

Ninety-four percent of emission reductions by 2010.

PRIMARY BENEFIT FOR ALL ALTERNATIVE WORK SCHEDULE STRATEGIES:

TIER I

1.48 T/d ROG reduction by 1994

TIER II

23.08 T/d ROG reduction by 2010

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DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Emissions from vehicles traveling to and from work will be reduced by altering work schedules to reduce traffic congestion. Such altered schedules include 4 day/40 hour and 9 day/80 hour work weeks and flexible work hours. Under the 4 day/40 hour work week, employees work 10 hours a day for 4 days a week with one day off scattered throughout the week. Under the 9 day/80 hour work week, employees work 80 hours over a 2-week period, with one day off every two weeks.

Flexible work hours give employees some degree of responsibility and choice in determining their own starting and quitting times. The total length of the operating day is usually extended to include earlier morning hours and later afternoon hours. Core hours in which everyone is expected to be on the job are typically maintained. For example, core hours might be between 9:30 in the morning and 3:00 in the afternoon. Flexible arrival and departure times are then added to either end of the working day.

Legislation that removes impediments to modified work schedules would enable employers to negotiate more effectively with employees. Generally, unions wish to preserve the concept of an 8-hour day, with overtime pay for time worked beyond 8 hours.

Alternatives to the typical 40 hour, 5 day work week can act to reduce vehicle emissions two ways by increasing employees opportunities to rideshare or by reducing the number of days employees must commute to work. Also, spreading the peak period usage of facilities can reduce hours of congested travel, thereby reducing vehicle emissions. This control measure would lead to reduction of 3.1 million person trips (as compared to the base case).

Regulatory History

The 1979 Plan included H4 Modified Work Schedules. The measure called for 4/40 work schedules to reduce vehicle trips and staggered work hours and flextime to improve the use of transportation facilities.

The 1982 AQMP included I10: Modified Work Hours. Implementation by employers of 4/40 and 9/80 work schedules was encouraged, but was not mandatory.

There is no known mandatory regulation of modified work schedules. However, voluntary implementation of modified work hours was effective in conjunction with other measures taken during the 1984 Olympic Games to reduce air pollution and traffic congestion. Also, large employers with limited entry and egress points have also used modified work schedules to limit morning and evening traffic congestion.

Additionally, SB 2723 (Seymour), has been introduced in the state legislature, to require state agencies and departments to establish flex-time policies and establish a goal of ridesharing by 50% of state employees.

There is no known regulatory history with respect to labor contract legislation for modified work hours.

CONTROL METHODS

TIER I

- o As a major regional employer, local government can contribute to significant emission reductions by implementing the various alternative work schedules outlined above. Jurisdictions will be expected by January 1, 1990, to implement specific programs for their employees, which will reduce work trips by 10%, using alternative work schedules. Before program implementation, the jurisdiction must provide data on current work trip levels. Program progress and effectiveness will be monitored and reported annually to SCAG for incorporation in the Reasonable Further Progress (RFP) Report.
- o Local governments must adopt or amend trip ordinances by January 1, 1991 to call for alternative work schedules as a condition of business license renewal or as a permit condition for new development. Implementation must lead to a 10% reduction in work trips. The ordinance would require that baseline work trip data be generated. Upon implementation, the jurisdiction would be required to monitor the progress and effectiveness of the ordinance and report results and baseline data annually to SCAG for incorporation in the RFP Report.
- o In the absence of action by local government, SCAQMD Regulation XV must be expanded or a New Indirect Source Rule must be adopted

10% reduction in work trips. The new regulations should be adopted with effective implementation date no later than January 1, 1993.

- o EPA, SCAG, the SCAQMD, and local governments must look at legislation to remove impediments to alternative work schedules in management bargaining agreements.
- o SCAG/SCAQMD must conduct a regionwide feasibility study by 1990 to determine the optimal use of flextime in activity centers and in diverse transportation corridors, which involves employers and Transportation Management Associations.

IMPLEMENTATION ISSUES

Issues which must be addressed in the implementation of alternative work schedules include the following:

- Management bargaining time frames may preclude immediate implementation of changed work hour agreements;
- Coordination of employer plans for changed work schedules will be necessary to maximize the effectiveness of the control methods;
- Management personnel will need to be trained to adapt management styles to the variable schedules of staff members;
- Employees may be resistant to regulation that appears may reduce their personal freedom;
- Monitoring and measuring of air quality benefits is needed.

OTHER IMPACTS

The control measure would have the following positive impacts: increased employee productivity through improved morale and reductions in time off due to tardiness or sick leave; reduced traffic congestion; cost savings due to decreased need for expansion of the transportation system.

The control measure would have the following negative impacts: may require greater management of employees; employee fatigue in working more than 8 hours/day; increase in leisure trips on day off.

LEGISLATIVE/RESEARCH NEEDS

- o Local governments need to include this measure in Air Element portion of General Plan.
- o District (or other regulatory body) regulation would be needed to implement mandatory program.

- o Legislation at the state and/or federal level would be required to remove impediments in management bargaining agreements to require modified work schedules.

IMPLEMENTATION ASSUMPTIONS FOR ALL ALTERNATIVE WORK SCHEDULE STRATEGIES

Alternative work schedules, flextime, and telecommunications measures emission reductions are calculated together. It is assumed that 20% of the work force will participate in a 4 day/40 hour work week, 20% in a 9 day/80 hour work week, 20% will be on flextime, and 20% of the work trips will be reduced by telecommuting. The assumption is that a total of 80% of the work force will participate in this strategy. The strategy would lead to a 30% total reduction in work trips and a 5% increase in non-work trips.

TIER I

In Tier I, implementation of alternative work schedules by local governments is assumed by January 1, 1991; plan formulation will take place to January 1, 1991; emission reductions will accrue from 1991 through 1993, or three years, at a rate of 2%/yr., or 6% of total projected for this group of measures.

TIER II

In Tier II, emission reductions are assumed at 6%/yr for 15 years.

INDICATORS FOR ALL ALTERNATIVE WORK SCHEDULE STRATEGIES

Based on the above implementation assumptions, alternative work schedules and telecommunications will reduce 2.56 million trips and 27.60 million vehicle miles traveled (VMT), and 1.94 million in vehicle hours traveled (VHT) to 2010. In relation to Baseline, the implementation of this measure will result in a decrease of 6.34% trips, 6.83% VMT, and 8.61% VHT by 2010.

TIER I

In Tier I, a saving of .15 million trips, 1.66 million VMT and .12 million VHT will take place.

TIER II

Tier II savings amount to 2.41 million trips, 25.94 million VMT and 1.82 million VHT.

PRIMARY BENEFIT OF ALTERNATIVE WORK SCHEDULES STRATEGIES

TIER I

The two strategies will result in a 1.48 T/da ROG reduction by January 1, 1994.

TIER II

The two strategies will result in a 23.08 T/da ROG reduction by January 1, 2010.

REFERENCES





SCAG. February 1988. Regional Mobility Plan: Draft

Commuter Transportation Services, Inc. Undated. Variable Work Hours Implementation Guide.

U.S. General Accounting Office. July, 1985. Alternative Work Schedules for Federal Employees.

AQMP COMMITMENT SCHEDULE

MEASURE : 1.a. ALTERNATIVE WORK WEEKS AND FLEXTIME

| COMMITMENT | | | | | |
|------------------------|---|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Local governments, as employers, implement programs for employees to reduce work trips by 10% by January 1, 1990.
- o Local governments adopt or amend trip reduction ordinances to ask for AWS by January 1, 1991.
- o If necessary, Regulation XV expanded or new Indirect Source Rule adopted to include AWS by January 1, 1993.
- o SCAG, SCAQMD, and local governments look at legislation by January 1, 1990 to remove impediments to alternative work schedules in Management bargaining contracts.

1. b. TELECOMMUNICATIONS

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SUMMARY

SOURCE CATEGORY: Light Duty Auto/Light and Medium Duty Trucks

CONTROL METHODS: TIER I

- o Adopt by January 1, 1991, a specific program of telecommunications/work-at-home strategies to reduce work trips by local government employees by 20%.
- o ARB and EPA to promulgate a telecommunications/work-at-home program to reduce state and federal agency employees trips by 20% by January 1, 1992.
- o Local governments adopt ordinances by January 1, 1994, requiring satellite work centers.
- o Telecommunications program promulgated by state and federal agencies in the region by January 1, 1991.
- o If necessary, expand Regulation XV or adopt an Indirect Source Regulation, by January 1, 1993, to reduce work trips by 20% through telecommuting.
- o Support non-work trip reduction legislation by January 1, 1992.

TIER II

- o Adopt local ordinances by January 1, 1999, to require 5% of space in multiple facilities for satellite work centers.
- o Agencies and local governments work toward tax incentive legislation.

IMPLEMENTING

AGENCIES: SCAQMD, Federal, state, and local governments.

IMPLEMENTATION ASSUMPTIONS FOR ALTERNATIVE WORK SCHEDULE STRATEGIES

Sixty percent of the work force in 2010 will participate in alternate work schedules, 20% of work trips will be reduced by telecommuting.

TIER I

Six percent of total projected emission reductions by January 1, 1994.

TIER II

Ninety-four percent of total projected emission reductions by 2010.

PRIMARY BENEFIT FOR ALTERNATIVE WORK SCHEDULES AND LOCATIONS:

TIER I

1.48 T/d ROG reduction by 1994

TIER II

23.08 T/d ROG reduction by 2010

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DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Since travel is often undertaken out of a need to communicate, telecommunications technology can replace some travel by moving the information that needs to be communicated rather than the person. The two applications with the greatest trip reduction potential are telecommuting and teleconferencing. As the terms suggest, telecommuting replaces or reduces the commute trip, while teleconferencing reduces some kinds of work-related travel.

Telecommuting

Telecommuting can take the form of working from home, or working from a local center near the home. If the center is used by the employees of only one company, it is referred to as a satellite work center. If more than one company shares space in the same building, it is called a neighborhood work center. Local work centers can provide professional/social interaction and other amenities not commonly found in the home, including meeting rooms, photocopying, and clerical support. Local work centers differ from the conventional branch office or decentralized function (e.g., having a separate facility for back-office operations) in that employees work at a local center simply because they live nearby, not because their particular position requires it. However, geographic decentralization (of businesses) in any sense has elements in common with telecommuting: the need for communications linkages back to a central location, and potentially improved job-housing balance through moving the work closer to the worker.

Telecommuting can be full-time or part-time -- e.g. one or a few days a week. Telecommuting even once every two weeks eliminates or greatly reduces 10% of an individual's commute-miles, a not insignificant savings. Telecommuting for part of the day to avoid one or both peak periods is also a viable option. This control measure assumes full-time telecommuting,

whether at home, at a local work center, or some combination of both forms of telecommuting.

Telecommuting need not require computers or sophisticated telecommunications equipment, although such equipment may be essential for some occupations, and may enhance the amount and effectiveness of telecommuting that can occur in other occupations. Jobs that are well-suited to telecommuting (at least part-time) are those which involve handling information, in which the need for office-based equipment is not high or can be largely scheduled in advance, and/ or in which the need for face-to-face interaction is not high or can be largely scheduled in advance. Information workers are estimated to constitute 55-60% of the workforce today, and possibly as much as 70% by the year 2000.

A broad definition of "telecommuter" includes the self-employed worker and the independent contractor working from home. "Contingent workers," including part-time, self-employed, temporary, and independent contractor already constitute 29% of the workforce, and that sector of the workforce is growing. To the extent that self-employed workers or independent contractors working from or near home would otherwise be salaried employees commuting to a location some distance away, those workers are, in effect, telecommuting.

SCAG has evaluated a telecommuting pilot conducted for its employees. The findings are documented in the draft Evaluation Report: Telecommuting Pilot Project for the Southern California Association of Governments (August, 1988), including an average net travel savings of 41 person-miles per telecommute occasion. On balance, the evaluation was positive, and the report recommended that SCAG initiate a program by January 1, 1989, for reducing employee work-related VMT by 20%.

The State of California launched an ambitious telecommuting pilot, primarily for Sacramento-based employees (JALA Associates, 1985). More than 100 participants from 15 state agencies (including Caltrans, CEC, and ARB) are now telecommuting. Many more participants are expected to join the pilot project which is scheduled to last over one year. The study's evaluation will include assessing transportation and air quality impacts.

Teleconferencing

Teleconferencing can also take several forms. The two categories most likely to affect travel are video conferencing and audio conferencing. Two- or multi-way full-motion video conferencing most closely approximates face-to-face interaction. The EPA Region IX Transportation/Air Quality Review Group has conducted three of its meetings as a two-way video conference between Northern and Southern California. Many companies are now using one-way video to multiple sites, sometimes with audio (telephone) connections from those sites back to the central location, for product announcements, training programs, and other corporate communications. This use of video conferencing is sometimes referred to as "business television."

Full-motion video, whether one-way or multi-way, requires a high-capacity (and therefore high-cost) transmission medium such as satellite, microwave, coaxial cable, or fiber optics. By settling for less than full-motion quality, it is possible to "squeeze" video transmission onto the twisted copper pair used for ordinary voice telephone calls. Desktop video conferencing (similar to AT&T's original Picturephone, only targeted toward businesses rather than to individual consumers) will continue to grow as costs of transmission and terminal equipment continue to decline.

Audio conferencing is becoming a more prevalent way of conducting routine committee or working-group business rather than having participants travel to a common meeting place. For example, several committees of the Regional Institute of Southern California prefer to "meet" via conference call whenever possible. Audio conferencing is the least expensive and easiest-to-implement form of teleconferencing. A less common, more expensive, but sometimes more useful variation is audio graphics conferencing, which includes the ability to transmit graphics information simultaneously with voice. Two people, each with a telephone and a Fax machine, constitute a low-tech version of audio graphics conferencing.

Conceptually, there are a number of reasons why teleconferencing may not reduce overall travel as much as might be expected. There may be secondary reasons for traveling on business (e.g., visiting friends, recreation), that cannot be met by teleconferencing. Up to a point, travel may be viewed as a status symbol or simply a break from routine. There may be strategic reasons to use up the travel budget this year so as to justify the same or higher level for next year. When teleconferencing is available on a regular basis, travel saved due to teleconferencing may be replaced by an equal amount of new travel. More meetings may occur (each probably generating travel) than would take place without teleconferencing. The fact that the meeting is more convenient to more people may mean that the aggregate amount of travel taking place is greater. This was empirically documented when SCAG conducted one of its policy committee meetings as a two-location video conference. The average individual trip length decreased, but because attendance was higher than normal, overall vehicle-miles traveled actually increased (SCAG, 1986).

However, even in situations where travel increases, much of that increased travel will take place in off-peak, less-congested conditions. The central benefit of telecommunications, in some circumstances, may be the increased flexibility it affords for redistributing travel patterns. Given a choice, many people will choose to travel at times and to places for which there is excess capacity in the transportation system. Telecommunications seems to offer the potential for accommodating a certain amount of transportation growth without a corresponding increase in congestion. To the extent that congestion is mitigated by smoothing out the peaks, air quality will benefit as well.

Regulatory History

Telecommunications has not historically been an explicit component of air quality regulation. It first appeared as a long-range strategy in the 1982

AQMP, which estimated the air quality impacts of a 12% trip reduction (in year 2000 levels) due to telecommunications substitution. It was included in the 1985 Long-Range Strategies for Clean Air (SCAQMD and SCAG). Recently, telecommuting has begun to be incorporated in various trip mitigation ordinances and plans. For example, telecommuting is listed in SCAG's Prototype Transportation/Land Use Ordinance and Report (January, 1987). Telecommuting also qualifies as a trip reduction strategy under Regulation XV of the SCAQMD.

CONTROL METHODS

TIER I -- to January 1, 1994

- o Local governments will adopt specific telecommunications programs for their employees, by January 1, 1991, which will lead to a 20% reduction in work trips.
- o Local governments will adopt trip reduction ordinances by January 1, 1992, requiring employees to reduce 20% of work trips using telecommunications strategies.
- o EPA and ARB will promulgate a telecommunications program for federal and state employees in the SCAB by January 1, 1991.
- o SCAQMD Regulation XV must be expanded or a new Indirect Source Rule must be adopted by January 1, 1993, which reduces 20% of the work trips through telecommunications for large employers by January 1, 1994. The rules should include a phased-in expansion to include pilots for smaller companies and to move beyond pilot-sized employee populations to large companies.
- o Local governments will adopt ordinances which require new employment developments in job-rich areas (employment-to-population ratio exceeds 0.55) to compensate by establishing satellite work center in housing-rich areas.
- o The above referenced ordinances should require those responsible for any public facility in housing-rich areas (such as a school or a library), which is slated to be closed or consolidated with another facility, to include a neighborhood work center in an analysis of alternative uses of the facility.
- o By January 1, 1992, state legislation is needed to require financial institutions and their regulators to determine the most feasible services (primarily banking and bill payment) that can be offered via telecommunications.
- o A feasibility study should be conducted by state government, SCAG, financial entities and utilities by January 1, 1992 to determine appropriate expanded automatic banking and bill payment programs to implement.

- o By January 1, 1992, state legislation is needed to require educational institutions (secondary, junior college, and college levels) through their governing boards to determine the extent to which in-classroom hours (hence school-related trip making) could be reduced by designing core curriculum courses that could be learned at home either interactively or with video applications; programs would have phased implementation after 1992.
- o Local government ordinance/regulation is needed by 1992 to require local licensed businesses in conjunction with cable television operators to determine the feasibility of developing centralized ordering and home delivery services in order to partially eliminate the total need for individual tripmaking for the movement of common household goods. If product prices could be discounted through business overhead savings, delivery costs maybe offset. Programs would have phased implementation after 1992.
- o Local governments must ensure that their zoning and licensing ordinances permit telecommuting.
- o All new office developments and redevelopments above 25,000 square feet to include video conferencing facilities in their developments should be given credit toward satisfying portions of Regulation XV and/or indirect source requirements. Based on size and location of the development, this would allow credit for VMT reductions due to teleconferencing between and within regions.
- o Local governments should conduct an extensive education program on telecommuting for employers and employees, comparable to efforts for ridesharing, rideshare agencies like Commuter Computer and OCTD, professional societies like the Association for Commuter Transportation, and rideshare coordinators of major companies and TMAs to assist in disseminating information about telecommuting. ARB and EPA should take the lead in identifying specific programs for alternative work schedules and telecommunications aimed at reducing work trips by 20%.

TIER II -- to 2010

- o Local government must, over the longer term, adopt ordinances requiring employers with multiple facilities to set aside up to 5% of the space in every office facility greater than 25,000 square feet. The space would be for use by employees of that company who live near the facility but normally work at another location. The facility would change in function from a single-function branch office to a satellite work center.
- o SCAG, SCAQMD, other agencies and local governments should work to get legislation for tax incentives for developers to voluntarily establish work centers in housing-rich areas (employment-to-population ratio less than 0.38).

- o Congressional representatives in the region should take the lead in accomplishing the abolition of prohibitions of certain kinds of home work.
- o All agencies listed, as well as the private sector, should participate in funding and conducting research, implementation, and evaluation of telecommuting and teleconferencing activities.

It is assumed that 70% of the work force in 2010 will be information workers. Home based work is expected to grow. By 2010 100% of all information workers, including the self-employed, should be telecommuting an average of 30% of the time.

For this measure, the goal of eliminating 20% of work-related travel due to telecommuting was established a priority a priority by the Regional Mobility Plan. The starred method represent different (partially overlapping) approaches which collectively, if fully implemented, will achieve 20% reduction. The remaining methods are needed to facilitate implementation of the first four. No prioritization is implied by the presence or absence of an asterisk.

IMPLEMENTATION ISSUES

The issues to be addressed in implementation include the following:

A uniform 20% reduction due to telecommuting for every company would be difficult to achieve, because (i) not every job in every industry is equally well-suited to telecommuting, and (ii) the requirement might be unduly disruptive for small companies.

But setting different goals by industry type and company size is cumbersome and may not accurately fit the situation, either. For example, a "manufacturing" company in the aerospace industry may have thousands of information workers well-suited to telecommuting. Another manufacturing firm may consist largely of assembly-line workers.

The definition of "information worker" is problematic as well; it includes some location-dependent occupations (such as photocopying clerks), and may exclude some occupations well-suited at least to part-time remote work (such as physicians). Thus, setting telecommuting goals that will be appropriate in each situation will be difficult.

Additional implementation barriers, issues, or problems include:

- funding for research and legislative needs;
- managerial concerns (see "Research Needs");
- union concerns about exploitation of home-based workers.

CONTROL COSTS

Over a twenty year period, it will cost approximately \$10 million to establish pilot projects and, fund research and legislative needs, and approximately \$100 million to \$200 million to construct and equip 200 to 300 local work centers. The costs to the developer/owner of constructing and operating the local work center would be recovered from rents. Costs to the employer would be recovered through space savings elsewhere within the company. There will be an additional cost of approximately \$10 to \$20 million for tax incentives to establish home offices and to install teleconferencing facilities in office developments.

OTHER IMPACTS

Transportation and energy use will benefit from travel reductions due to telecommunications, in the form of decreased congestion and fuel consumption.

Unlike many of the other measures, telecommuting and teleconferencing have intrinsic benefits to the users, which is why many companies are already implementing them independently of transportation or air quality concerns. Potential positive impacts on society as a whole include the economic benefits of increased productivity, competitive advantage, and employment for the mobility-limited; stronger family and community ties; and decreases in some kinds of crime as more people remain at home during the day.

Telecommuting improves job-housing balance by bringing the job right to the home, or (in the case of local work centers), very close to the home. On the other hand, some telecommuters may be motivated to move further from the central office if they only have to go there once a week instead of every day. It is possible that total commute miles for some of those individuals would be greater than before they moved. However, such cases are expected to be a small minority, more than compensated for by commute-miles saved by others.

Telecommuting is being used in some places as an economic development strategy for disadvantaged areas or segments of the workforce. For example, Project Build in the Watts area includes teaching computer skills to qualified unemployed residents. Several graduates of the program are working for downtown Los Angeles firms, from a local work center near their homes (Krebs, 1987). These telecommuters save the time and cost of a lengthy commute to downtown, remain close to their children in nearby day-care facilities, and contribute to the economic revitalization of their neighborhoods.

LEGISLATIVE/RESEARCH NEEDS

Legislative Needs

Local government must set a timetable of revision of local zoning ordinances which inhibit telecommuting by January 1, 1991. Local

ordinances which govern home-offices and businesses-in-the-home may preclude or discourage telecommuting.

SCAG, SCAQMD, ARB, Caltrans and CEC should work to liberalize the tax deductability of home offices and work-related use of a home computer and loosen the definition of independent contractor.

Legislation which provides incentives to establish local work centers is essential for implementation of this measure. Positive incentives are needed, such as tax benefits to a company establishing a work center in a predominantly neighborhood location. Tax incentives should also be extended to companies entering joint-venture shared work centers. Incentives should be provided for establishing video conferencing facilities in new developments.

New rulings on workman's compensation and liability uncertainties in telecommuting would facilitate startup of telecommuting projects. Liability and risk management are a major concern to employers.

Telecommuting in the broad sense of the word is likely to increase as more formerly salaried workers become self-employed or independent contractors, often working from home or at least much closer to home than before. Yet legal definitions of what constitutes an independent contractor (versus a salaried employee) are relatively restrictive and sometimes conflicting among different Federal and state agencies. A loosening of the restrictions on the definition of an independent contractor would increase the number of companies and workers able to participate in this alternative work arrangement.

As pilot and demonstration telecommuting projects are implemented throughout the state, funding is needed to objectively evaluate and assess the impacts on air quality, energy consumption, traffic congestion and productivity of the work force.

Research Needs

Additional study is needed on the travel and air quality impacts of teleconferencing (intra- and inter-regional). Research is needed to answer a number of questions: does a market exist for teleconferencing? What is the size of that market? What percent of VMT is due to local work-related travel and ground access to inter-regional travel? How does the amount of work-related travel differ between companies with permanent teleconferencing facilities, and those without? Are fewer trips being made by more people? How is trip length changing? Are there time-of-day impacts?

Research is also needed to determine the impact of telecommuting on mode choice. Are all modes affected equally? What will be the implications in the aggregate for transit, ridesharing?

Very little information has been documented on the trips generated as a result of telecommuting. If telecommuting induces opportunities to

generate greater number of short trips, it may not be as beneficial from an air quality perspective. Therefore, there is a need for assessment of air quality impacts of telecommuting-related trip generation. Shorter trips will be created, whether commute trips to local work centers or non-work activities. These trips, besides being shorter, are more likely to take place at off-peak times and on less-congested parts of the transportation system than conventional commute trips. What are the emissions tradeoffs between the commute travel saved and the new trips generated? In general, are more trips created?

Will there be significant residential relocation associated with increased telecommuting opportunities? If so, what will the transportation and air quality impacts be?

Probably the biggest barrier to widespread voluntary telecommuting is managerial concern over whether employees would actually be working. Accordingly, telecommuting implementation could profit from research into human resources management questions. How can on-going communication of expectations between managers and employees be improved? How can performance criteria for non-quantifiable, professional work be established? How can managers be trained to manage results rather than physical presence?

IMPLEMENTATION ASSUMPTIONS FOR ALL ALTERNATIVE WORK SCHEDULE STRATEGIES

Alternative work schedules, flextime, and telecommunications measures emission reductions are calculated together. It is assumed that 20% of the work force will participate in a 4 day/40 hour work week, 20% in a 9 day/80 hour work week, 20% will be on flextime, and 20% of the work trips will be reduced by telecommuting. The assumption is that a total of 80% of the work force will participate in this strategy. The strategy would lead to a 30% total reduction in work trips and a 5% increase in non-work trips.

TIER I

In Tier I, implementation of alternative work schedules by local governments is assumed by January 1, 1991; plan formulation will take place to January 1, 1991; emission reductions will accrue from 1991 through 1993, or three years, at a rate of 2%/yr., or 6% of total projected for this group of measures.

TIER II

In Tier II, emission reductions are assumed at 6%/yr for 15 years.

INDICATORS FOR ALL ALTERNATIVE WORK SCHEDULE STRATEGIES

Based on the above implementation assumptions, alternative work schedules and telecommunications will reduce 2.56 million trips and 27.60 million vehicle miles traveled (VMT), and 1.94 million in vehicle hours traveled (VHT) to 2010. In relation to Baseline, the implementation of this measure will result in a decrease of 6.34% trips, 6.83% VMT, and 8.61% VHT by 2010.

TIER I

In Tier I, a saving of .15 million trips, 1.66 million VMT and .12 million VHT will take place.

TIER II

Tier II savings amount to 2.41 million trips, 25.94 million VMT and 1.82 million VHT.

PRIMARY BENEFIT OF ALTERNATIVE WORK SCHEDULES STRATEGIES

TIER I

The two strategies will result in a 1.48 T/da ROG reduction by January 1, 1994.

TIER II

The two strategies will result in a 23.08 T/da ROG reduction by January 1, 2010.

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AQMP COMMITMENT SCHEDULE

MEASURE : 1.b. TELECOMMUNICATIONS

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|-------------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Local governments, as employers, to adopt a telecommunications program by January 1, 1991 to reduce employee trips by 20%.
- o Local government adoption of a trip reduction ordinance by January 1, 1992, requiring telecommunications strategies.
- o ARB and EPA to promulgate a telecommunications program to reduce state and federal agency employees trips by 20% by January 1, 1992.
- o Under Regulation XV or Indirect Source Regulation adopted by January 1, 1993, require 20% reduction in worktrips through telecommuting.

2. MODE SHIFT STRATEGIES

2. a. EMPLOYER RIDESHARE & TRANSIT INCENTIVES

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SUMMARY

SOURCE CATEGORY: Light Duty Auto

CONTROL METHODS: TIER I

- o Adopt ordinances by July 1, 1990 to require trip reduction plans for facilities with tenants employing more than 100 employees.
- o Adopt ordinances by January 1, 1991 to require facilities employing 25 to 99 employees to disseminate information on trip reduction.
- o Evaluate effectiveness of reducing ordinance employee level threshold to 25+ by 1992.
- o If necessary, expand Regulation XV, by January 1, 1993, to cover businesses with 25 employers or more.
- o SCAQMD, SCAG and local governments should encourage the formation of Transportation Management Associations.

TIER II

No additional control methods.

IMPLEMENTING
AGENCIES:

Local governments and/or SCAQMD.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES

Emission reductions for all Mode Shift Strategies are calculated together and are based on an assumed 6% mode shift.

TIER I

Local government actions by January 1, 1994 will lead to 12% of total projected emission reductions.

TIER II

Eighty-eight percent of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFITS FOR ALL MODE SHIFT STRATEGIES

TIER I

0.62 Tons/day ROG reduction by 1994.

TIER II

9.64 Tons/day ROG reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

All Control Methods focus on trip reduction and traffic mitigation measures for home to work trips. In 1984, over 7.3 million trips were made between home and work in the South Coast Air Basin. Many of these trips could have been eliminated through a concerted employer effort to implement ridesharing techniques such as carpooling, vanpooling, and transit ridership promotion.

This measure is coordinated with Measure #18, Growth Management. The job/housing balance policy of the Growth Management measure seeks to reduce the need for long-distance commuting trips, thus making transit, bicycling, and walking more attractive commute alternatives.

Regulatory History

The regulatory history of work trip reduction control methods consists of 1979 and 1982 AQMP Measures, local government actions and SCAQMD Regulation XV. The 1979 AQMP included H34 Employees Ridesharing Program. Each employer or firm of at least 100 employees would operate a program by promotion and matching services but, may require additional incentives, such as preferential parking or some form of travel subsidy to make program work.

H112 Carpool Sign-ups for Government Employees encouraged personnel departments to issue a carpool-matching application to each employee and to distribute computer printouts indicating potential carpoolers in each employee's vicinity, along with the closest bus route and schedule.

I8 Ridesharing, Employer Directed Ridesharing called for the following actions to encourage greater employee ridesharing: (1) carpool and vanpool matching and promotion; (2) preferential parking for ridesharers; (3) financial incentives for carpoolers; and (4) financial incentives for vanpools.

I9 Ridesharing through Parking Management called for the following actions to encourage ridesharing: (1) amend parking requirements in local zoning ordinances to limit the number of off-street parking spaces required for

new land uses; (2) Residential Parking Permit Program; and (3) employee transportation allowance and the charging of employee parking.

Employer-based trip reduction and ridesharing programs have been frequently advocated for their potential to decrease mobile emissions and for their ability to improve traffic flow by taking cars off the road. Several local governments, including Sacramento County, the City of Pleasanton, the City of El Segundo, and the City of Los Angeles, have adopted regulations which require mandatory participation by employers or facilities in trip reduction and traffic mitigation programs.

The Sacramento County Trip Reduction Program and Los Angeles' Transportation Specific Plans, Impact Zones, and project-specific transportation plans incorporate alternatives selected by the developer to reduce the number of trips made. The cities of Oxnard and Walnut Creek have also adopted facility-directed approaches to be used in lieu of development fees. Their programs provide funding for areawide traffic circulation and parking improvements.

In December 1987, the South Coast Air Quality Management District adopted Regulation XV (Trip Reduction). Employers with 100 or more employees at a worksite are required by 1990 to develop and implement a trip reduction plan that will attain the average vehicle ridership (vehicle occupancy) specified for the different source receptor areas. This program strengthened the District's Regulation VII program which requires employers with 100 or more employees per shift to prepare a transportation management plan and implement it in the event of a second- or third-stage air pollution episode.

CONTROL METHODS - Tier I

- o Local governments will adopt ordinances by July 1, 1990 to require trip reduction plans for facilities with tenants employing more than 100 employees.
- o Local governments will adopt ordinances by January 1, 1991 to require facilities employing 25 to 99 employees to disseminate information on trip reduction.
- o Local governments will evaluate the effectiveness of reducing the ordinance employee threshold level to 25+ by 1992. Reducing the threshold would increase the number of employees affected by trip reduction measures, thereby producing greater opportunities for alternative commute matching and coordination.
- o If necessary, a direct expansion of Regulation XV requirements by January 1, 1993, would lower the threshold size of employer to cover 25+ employees.
- o If necessary, multi-tenant facilities in which more than 25+ employees are working would be regulated under an expanded Regulation XV. Facility owners or operators would be required to coordinate their

implementation of coordinated trip reduction plans. TMAs/TMOs will have mandatory participation by and assessments on each employer and developer in the center.

The ordinance or Regulation would require that baseline work trip data be generated. Upon implementation, the jurisdiction would be required to monitor the progress and effectiveness of the ordinance and report results and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES FOR ALL MODE SHIFT STRATEGIES

Issues which will impact implementation include the following: the small size of employee base (i.e., 25+ employee companies) could make individual employer compliance difficult; the number of small employers will require well-organized system for processing and enforcing the thousands of annual plans; the combination of journey to work trips with other trips (e.g., shopping, day-care pick-ups and drop-offs) make rideshare incentive programs difficult to implement.

OTHER IMPACTS

All control methods listed above have the following positive impacts: reduced congestion in the peak period; more efficient use of existing facilities; reduced parking needs for employers; provides an institutional structure for public and private sector cooperation in trip reduction programs; increased commuter pool from which to create rideshare matches.

All control methods listed above have the following negative impacts: cost to employers of providing incentives; development, implementation, and enforcement costs of trip reduction plans for smaller employees, building owners, and special event facilities; employee adjustment to alternative travel modes.

LEGISLATIVE/RESEARCH NEEDS

More comprehensive regulation of employers would need to be implemented by either augmentation of Regulation XV, additional rule-making by the SCAQMD, and/or local government regulations of employers and special event facilities in their jurisdictions.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES

A single emission reduction calculation has been produced for the group of seven mode shift strategies. A 6% transit mode shift is assumed to result from enhanced Regulation XV programs (lowered employer base from 100 to 25), increased average vehicle ridership (AVR) goals at 66 centers, Orange County Transit District established targets, full implementation of all HOV facilities and the transit network in the Regional Mobility Plan.

TIER I

Local government ordinances, Air Element adoptions and legislated tax benefits are assumed to occur, and HOV system programmed at 65%. A 12% emission reduction of the total projected for this measure will occur.

TIER II

For the remaining 15 years, emission reductions are to continue at a rate of 6%/year, or 88% of the projected reductions

INDICATORS FOR ALL MODE SHIFT STRATEGIES:

The transit mode shift assumed in all mode shift strategies will reduce 1.73 million work trips and 18.39 million vehicle miles traveled (VMT), saving 0.60 million vehicle hours traveled (VHT). In relation to Baseline, the implementation of this measure will result in a decrease of 4.27% trips, 4.55% VMT, and 2.69% VHT.

TIER I

Implementation during Tier I will reduce .21 million work trips, 2.20 million VMT, and save .07 million VHT.

TIER II

Implementation during Tier II will reduce 1.52 million work trips, 16.19 million VMT, and save 0.53 million VHT.

PRIMARY BENEFIT FOR ALL MODE SHIFT STRATEGIES

TIER I

The seven mode shift strategies will result in a 0.62 T/da ROG reduction by January 1, 1994.

TIER II

Reductions in Tier II amount to 9.64 T/da ROG.

REFERENCES

SCAQMD and SCAG. October 1982. Final Air Quality Management Plan: 1982 Revision.

SCAG. 1984. 1984 Regional Transportation Plan.

SCAG. February 1988. Regional Mobility Plan: Draft.

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AQMP COMMITMENT SCHEDULE

MEASURE : 2.a. EMPLOYER RIDESHARE AND TRANSIT

INCENTIVES

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|--|--|-------------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o By ordinance/regulation by July 1, 1990, require trip reduction plan for facilities with tenants employing more than 100 employees.
- o By ordinance/regulation by January 1, 1991, require facilities employing 25 to 99 employees to disseminate information on trip reduction.
- o Evaluate effectiveness of reducing ordinance/regulation employee level threshold to 25+, by 1992.
- o If necessary, SCAQMD to expand Regulation XV to cover businesses with 25 or more employees by January 1, 1994.
- o SCAQMD, SCAG and local government encourage formation of TMAs.

2. b. PARKING MANAGEMENT

=====

SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Trucks

CONTROL METHODS: TIER I

By July 1, 1990, conduct local assessments and adopt Air Quality Element to:

- o Increase daytime parking fees
- o Establish a surcharge on parking for single occupant vehicles and/or discount for multi-occupant vehicles
- o Eliminate peak-period on-street parking
- o Eliminate 100% employer subsidized parking
- o Require employer-sponsored preferential parking for ridesharers for employers of 100+ employees (short-term) and 25+ employees (long-term)
- o Residential parking zones/permit programs
- o Implement short-term commercial parking zones
- o Park-and-ride lots with shuttle service
- o Establish a cap on the number of parking spaces in a zone
- o Establish a cap on the number of parking spaces permitted per square foot for a particular use
- o Increase parking enforcement

TIER II

No additional control methods.

IMPLEMENTING
AGENCIES:

Local government.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES:

Emission reductions for all Mode Shift Strategies are calculated together and are based on an assumed 6% mode shift.

TIER I

Local government actions by January 1, 1994 will lead to 12% of total projected emission reductions.

TIER II

Eighty-eight percent of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFITS FOR ALL MODE SHIFT STRATEGIES

TIER I

0.62 T/da ROG reduction by 1994.

TIER II

9.64 T/da ROG reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

The goal of the Parking Management Control Measure is to reduce transportation source emissions by inducing shifts in transportation modes. A parking management tactic is an action taken to alter the supply, operation, and/or parking demand of a jurisdiction's parking system to further the attainment of local transportation, economic, or environmental objectives.

Regulatory History

Parking Management as a control measure was introduced in the 1979 AQMP in Control Measure H5 Carpool Preferential Parking. The measure called for such techniques as reserving existing parking spaces for rideshare vehicles, reduced parking charges for carpools, changes in parking ordinances and parking facility design, and increased terminal time for single occupant vehicles with reduced time for multi-occupant vehicles.

In the 1982 AQMP Control Measure I9: Ridesharing Through Parking Management, called for the following: (1) amend parking requirements in local zoning ordinances to limit the number of off-street parking spaces required for new land uses; (2) Residential Parking Permit Program; and (3) employee transportation allowance and the charging of employee parking. Employer-related parking Management as a Control Measure was also included in the 1982 AQMP in Control Measure I8: Ridesharing -- Employer Directed Ridesharing.

Regulatory history on control methods is as follows:

- o No known regulation of parking fee structures.
- o Local government currently regulates on-street parking for traffic flow purposes.
- o No known regulation of local government or private sector commercial parking operations.
- o No known regulation for Park-and-Ride lots but downtown L.A. parking management program encourages developers to build peripheral parking lots with shuttle service in lieu of on-site parking.

- o Local government sets policies for parking enforcement operations.
- o EPA Indirect Source regulations for other non-attainment areas have included requirements to decrease the supply of parking.

CONTROL METHODS

Local government must adopt ordinances by 1990 which:

- o Triple 1985 parking meter fees in all congested centers in the region; eliminate free parking for non-residential developments by 1994.
- o Impose a surcharge on parking spaces for single occupant vehicles and/or provide a discount for multi-occupant vehicles in all parking facilities.
- o Reduce availability of peak period on-street parking in congested urban areas; eliminate on-street parking on at-capacity arterials and major transit routes in congested areas during the day by 1994.
- o Eliminate employer subsidized parking and require preferential rideshare parking for all employers with 100+ employees; reduce employee level to 25+ by 1991.
- o Restrict residential parking to residents only through permit process in all areas adjacent to congested commercial activity centers.
- o Require the marking of parking spaces with adequate time-limit to produce rapid turnover thus increasing supply and reducing residential spillover (short and long term).
- o Limit the number of parking spaces permitted in specified city zones.
- o Limit the number of parking spaces permitted per square foot for specified uses.

Local government must commit:

- o Additional staff time and/or new parking enforcement techniques to parking enforcement operations.
- o Limit access to major activity centers to transit and non-motorized modes and to shuttles from peripheral parking only. Also, see TCM 2.e. -- Auto use Restrictions.
- o Apply revenues generated by increased parking fees to transit fares as a subsidy.

The ordinance would require that baseline work trip, VMT, and VHT data be generated. Upon implementation, the jurisdiction would be required to monitor the progress and effectiveness of the ordinance and report and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

Issues which will impact implementation include the following: regulation of parking supply and cost may be in conflict with strong market forces to the contrary; labor unions may resist elimination of free parking for employees unless compensated; land availability for park-and-ride lots may not match local land use priorities.

This measure must be paired with enhanced transit facilities and operations to meet created demand.

OTHER IMPACTS

Positive impacts of parking management control methods are as follows:

- o Decreased traffic congestion due to change in modal split
- o More efficient traffic flow
- o Cost savings to developers due to lower parking requirements
- o Cost savings to employers
- o Land freed for other uses

Negative impacts of parking management control methods are as follows:

- o Business community adversely affected when parking is removed from front of site
- o Employee opposition to reducing supply of free, on-site parking
- o General public opposition to government artificially reducing parking opportunities and increasing its cost.

Compatibility with other measures: The parking management control measure actions work in conjunction with Employer Rideshare and Transit Incentives, and Merchant Transportation Incentives.

LEGISLATION/RESEARCH NEEDS

- o Local Parking Management Ordinances must be adopted by local governments.
- o Legislation is needed to eliminate the tax advantage of free parking that was instituted in the Federal Tax Reform Act (i.e., free parking is a non-taxable fringe benefit, but subsidizing transit and ridesharing is a taxable fringe benefit)
- o Air Quality Elements to include in General Plans should be developed by local governments.

- o Better quantification of the air quality impacts of ridesharing programs is needed.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES

A single emission reduction calculation has been produced for the group of seven mode shift strategies. A 6% transit mode shift is assumed to result from enhanced Regulation XV programs (lowered employer base from 100 to 25), increased average vehicle ridership (AVR) goals at 66 centers, Orange County Transit District established targets, full implementation of all HOV facilities and the transit network in the Regional Mobility Plan.

TIER I

Local government ordinances, Air Element adoptions and legislated tax benefits are assumed to occur, and HOV system programmed at 65%. A 12% emission reduction of the total projected for this measure will occur.

TIER II

For the remaining 15 years, emission reductions are to continue at a rate of 6%/year, or 88% of the projected reductions.

INDICATORS FOR ALL MODE SHIFT STRATEGIES:

The transit mode shift assumed in all mode shift strategies will reduce 1.73 million work trips and 18.39 million vehicle miles traveled (VMT), saving 0.60 million vehicle hours traveled (VHT). In relation to Baseline, the implementation of this measure will result in a decrease of 4.27% trips, 4.55% VMT, and 2.69% VHT.

TIER I

Implementation during Tier I will reduce .21 million work trips, 2.20 million VMT, and save .07 million VHT.

TIER II

Implementation during Tier II will reduce 1.52 million work trips, 16.19 million VMT, and save 0.53 million VHT.

PRIMARY BENEFIT FOR ALL MODE SHIFT STRATEGIES

TIER I

The seven mode shift strategies will result in a 0.62 T/da ROG reduction by January 1, 1994.

TIER II

Reductions in Tier II amount to 9.64 T/da ROG.

REFERENCES

SCAG. 1984. 1984 Regional Transportation Plan

SCAG. 1987. 1987 HOV Plan Report

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U.S. Department of Transportation, FHWA. 1980. Study of Parking Management Tactics.

U.S. Environmental Protection Agency. 1986. Improved Air Quality in Maricopa and Pima Counties - The Applicability of Transportation Measures.

AQMP COMMITMENT SCHEDULE

MEASURE : 2.b. PARKING MANAGEMENT

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | ### | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | ### | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | ### ### | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

Local government to adopt an Air Quality Element into each General Plan by July 1, 1990, which will apply, as appropriate, to the following programs:

- Establish a surcharge on parking for single occupant vehicles and/or discount for multi-occupant vehicles.
- Eliminate peak-period on-street parking.
- Eliminate 100% employer subsidized parking.
- Require employer-sponsored preferential parking for ridesharers for employers of 100+ employees (short-term) and 25+ employees (long term).

(See measure for additional options.)

2. c. VANPOOL PURCHASE INCENTIVES

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SUMMARY

SOURCE CATEGORY: Light Duty Auto/Light and Medium Duty Truck

CONTROL METHODS: TIER I

- o Legislate favorable tax credits for employers who purchase or lease vans for employee vanpool programs by January 1, 1990.
- o Legislate favorable tax benefits for employees who use employer sponsored vanpools by January 1, 1990.
- o Legislate special tax credits for owner-operators of battery electric powered vanpools by January 1, 1993.
- o Legislate special tax credits for employers who sponsor work-day use of clean-fuel vans by January 1, 1993.

TIER II

No additional control methods.

IMPLEMENTING
AGENCIES:

State legislature/U.S. Congress

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES

Emission reductions for all Mode Shift Strategies are calculated together and are based on an assumed 6% mode shift.

TIER I

Local governments actions by January 1, 1994 will lead to 12% of total projected emission reductions.

TIER II

Eighty-eight of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFITS FOR ALL MODE SHIFT STRATEGIES

TIER I

0.62 T/da ROG reduction by 1994.

TIER II

9.64 T/da ROG reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

The goal of the Vanpool Purchase Incentives measure is to stimulate and increase the use of vanpools for work-related trips.

The repeal in 1987 of the rideshare tax credit contradicts federal, state, and local efforts to reduce traffic congestion. In addition, the repeal makes it difficult to meet provisions of the Federal Clean Air Act which may result in the loss of federal highway funds.

Senate Bill 1904 (Morgan) has been introduced to reinstate tax credits for the purchase or lease of specified vehicles used in employer-sponsored rideshare programs. Specifically, SB 1904 would:

- 1) Allow a 20% investment tax credit for purchase or lease of specified vehicles used in employer-sponsored rideshare programs.
- 2) Exclude from gross income compensation (except salary and wages) received by an employee from an employer for the actual costs of participating in specified ridesharing programs.
- 3) Allow employers to take a business deduction for:
 - Expenses involved in providing van or bus service for employees.
 - Subsidizing employee monthly transit passes.
 - Providing free or preferential parking to carpools and vanpools, or offering the cash equivalent of these parking privileges to those employees who do not require parking.
 - Costs of making facility improvements to encourage ridesharing, bicycling, and walking over a 36 month period.

There are additional bills in various stages of development that address tax credits for employees who use employer-sponsored vanpooling programs:

- Assembly Bill 2859 (Frizzelle) would allow a tax deduction for specified employees who commute to work in carpools or by mass transit.
- Senate Bill 1899 (Robbins) would reinstate tax rideshare credits that were repealed under Chapters 1138 and 1139 of the 1987 Statutes.

- HR 3403 (Kennelly D-CT) would exempt vanpoolers from being taxed on the value of employer-provided transportation and would raise the exemption for employer-provided transit passes to \$45 per month.

Regulatory History

Financial Incentives for Vanpools as a control measure was included in the 1982 AQMP under Control Measure I8: Ridersharing--Employer Directed Ridersharing. The measure called for special investment tax credits and accelerated depreciation for employers who purchase vans for use in vanpooling programs.

CONTROL METHODS

Tier I

This measure should be implemented in combination with Measure 2a, Employer Rideshare and Transit Incentives, and other mode shift strategies.

- o Through legislative implementation of Vanpool Purchase Incentives increase the number of vanpools by 15% over 1984 levels by Jan. 1, 1990.
- o Through legislative implementation of Vanpool Purchase Incentives increase the numbers of employees who vanpool by granting tax exempt status to compensation received for specific ridesharing programs, and by allowing tax deductions for employees who rideshare.
- o Elicit the use of owner-operator electric vans by proposing legislation to include special tax credits for electric vanpools by Jan. 1, 1990.
- o Elicit work-day use of clean-fuel vans by proposing legislation to include special tax credits for use of clean-fuel vans by Jan. 1, 1990.

Tier II

- o Through legislation, increase 3+ person carpools by 30% over 1984 levels by 1995. Decrease other work-related vehicle trips by 5% due to vanpool formation by 1995.

The implementing agencies would be required to generate baseline vanpool purchases and ridership data. Upon implementation, the agencies would be required to monitor the progress and effectiveness of the measure and report results and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

Legislation is required before any of these control methods can be implemented. Employers and employees who sponsor or use vanpool programs must not be penalized financially.

IMPACTS

Positive

The Vanpool Purchase Incentives measure can have positive impacts by contributing to improved air quality through a reduction in VMT, improved traffic flow, and changes in modal split, and conversion to vehicles that use cleaner fuels. Other positive impacts are: commuter travel cost savings, employer cost savings through a reduction in parking spaces needed, increased employee morale, and a positive community image for the company.

Negative

The control methods can have negative impacts by imposing lifestyle changes on employees, affecting only 20% of total trips, and having the costs borne by employers.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES

A single emission reduction calculation has been produced for the group of seven mode shift strategies. A 6% transit mode shift is assumed to result from enhanced Regulation XV programs (lowered employer base from 100 to 25), increased average vehicle ridership (AVR) goals at 66 centers, Orange County Transit District established targets, full implementation of all HOV facilities and the transit network in the Regional Mobility Plan.

TIER I

Local government ordinances, Air Element adoptions and legislated tax benefits are assumed to occur, and HOV system programmed at 65%. A 12% emission reduction of the total projected for this measure will occur.

TIER II

For the remaining 15 years, emission reductions are to continue at a rate of 6%/year, or 88% of the projected reductions.

INDICATORS FOR ALL MODE SHIFT STRATEGIES:

The transit mode shift assumed in all mode shift strategies will reduce 1.73 million work trips and 18.39 million vehicle miles traveled (VMT), saving 0.60 million vehicle hours traveled (VHT). In relation to Baseline, the implementation of this measure will result in a decrease of 4.27% trips, 4.55% VMT, and 2.69% VHT.

TIER I

Implementation during Tier I will reduce .21 million work trips, 2.20 million VMT, and save .07 million VHT.

TIER II

Implementation during Tier II will reduce 1.52 million work trips, 16.19 million VMT, and save 0.53 million VHT.

PRIMARY BENEFIT FOR ALL MODE SHIFT STRATEGIES

TIER I

The seven mode shift strategies will result in a 0.62 T/da ROG reduction by January 1, 1994.

TIER II

Reductions in Tier II amount to 9.64 T/da ROG.

REFERENCES

SCAQMD and SCAG. October 1982. Final Air Quality Management Plan: 1982 Revision

SCAG. February 1988. Regional Mobility Plan: Draft

Commuter Computer: Legislative Alert. February 1988

Association for Commuter Transportation: Newsletter (Feb-March '88)

Legi-tech Bill Summaries. April 1988.

AQMP COMMITMENT SCHEDULE

MEASURE : 2.c. VANPOOL PURCHASE INCENTIVES

| COMMITMENT | | | | | |
|------------------------|---|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | ### ### | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- Legislate favorable tax credits for employers who purchase or lease vans for employee vanpool programs by January 1, 1990.
- Legislate favorable tax benefits for employees who use employer sponsored vanpools by January 1, 1990.
- Legislate special tax credits for owner-operators of battery electric powered vanpools by January 1, 1993.
- Legislate special tax credits for employers who sponsor work-day use of clean-fuel vans by January 1, 1993.

2. d. MERCHANT TRANSPORTATION INCENTIVES

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SUMMARY

SOURCE CATEGORY: Light Duty Auto/Light and Medium Duty Truck

CONTROL METHODS: TIER I

- o Adoption by January 1, 1991 of non-work trip reduction ordinances which would require merchants (large retail establishments) to offer customer mode-shift travel incentives and require owners/managers/developers of retail establishments to provide facilities for non-motorized transportation needs. (See Control Measure 2.a. for Transit Incentives, 2.e.: Auto Use Restrictions.)
- o If necessary, adoption by January 1, 1992, of an SCAQMD Indirect Source Rule to implement the same control methods.

TIER II

No additional control methods.

IMPLEMENTING

AGENCIES: Local government/SCAQMD.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES

Emission reductions for all Mode Shift Strategies are calculated together and are based on an assumed 6% mode shift.

TIER I

Local governments actions by January 1, 1994 will lead to 12% of total projected emission reductions.

TIER II

Eighty-eight of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFITS FOR ALL MODE SHIFT STRATEGIES

TIER I

0.62 T/da ROG reduction by 1994.

TIER II

9.64 T/da ROG reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

The goal of the Merchant Transportation Incentives measure is to reduce the number of single auto-occupant non-work trips, increase non-work transit use and alternative modes of transportation to help alleviate traffic impacts of existing and new retail developments.

Regulatory History

This measure was not included in the 1979 or 1982 AQMP's.

However, some aspects of this measure were introduced in other Control Measures in both Plans. The 1979 Plan contained H23 Increased Bicycle/Pedestrian Facilities. An additional amount of SB 821 moneys or similar funding would be made available to construct new bicycle facilities (bike paths, bike racks, etc.) and pedestrian facilities (sidewalks, over-crossings, etc.). In addition, cities and counties would consider amending zoning, subdivision, and building ordinances to require the provision of bike paths, over-crossings and pedways, bike racks and other facilities to encourage walking and bicycle riding.

In the 1982 Plan, Control Method I4: Bicycling Improvements was as follows: A program to promote bicycling would be established by cities and counties in the South Coast Air Basin. For the program to be successful, the following elements would be necessary: 1) bicycling facilities 2) training and education programs 3) enforcement of bicycling and driving laws 4) marketing and public awareness programs 5) coordination of land use and bicycle planning 6) institutional awareness. These efforts would be used to divert 1% of all trips of three miles or less to the bicycle mode.

The LACTC has recently implemented a new bicycle path program and most counties and cities have bicycle routes connected with the recreational element of their General Plans. Dedicated improvements over the past few years have led to beginning of a coordinated recreational network of bicycle paths throughout the region. The bicycle home-to-work trip has not been a major air quality control measure.

Control Method I6: Walking Improvements in the 1982 AQMP sought to divert 10% of all automobile trips of 1/2 mile or less to walking trips. This diversion would be accomplished through a continued and expanded provision of pedestrian facilities including: street lights, sidewalks, curb ramps and wait/walk signals.

Pedestrian design improvements have enhanced many of the planned communities in this region; however, their overall air quality benefit has been negligible.

Projects in place in the region include Santa Monica Place, Santa Monica, in which a valid purchase receipt for ten dollars or more can be exchanged on the day of purchase for a free bus token. This program has been in operation since the mall opened in 1980, and is the result of a traffic mitigation agreement with the City of Santa Monica. Under the agreement, employees are also given up to ten bus tokens per week.

CONTROL METHODS

Tier I

Through local government adoption of non-work trip reduction ordinances, by January 1, 1991, require major retail centers to offer customer travel incentives; require owners/managers/developers of both new and existing large retail establishments to provide facilities for non-motorized transportation needs, such as providing bike racks, adequate pathway systems and to design sites to facilitate bicycle and pedestrian movement through mixed use and clustered developments.

Increase non-work related transit mode split by 10% annually (or approximately 52,000 trips per year) over 1984 levels. Set local objectives and provide commensurate mode shift opportunities through carpooling, walking, and bicycling incentive programs. Divert 1% of all trips of 3 miles or less to the bicycle mode, divert 10% of all auto trips of 1/2 mile or less to walking trips. Divert 12% of single occupant auto trips to carpools of 2+ persons.

In the absence of local action, the SCAQMD would adopt by January 1, 1992 an Indirect Source Rule to implement the same control methods.

Tier II

The above ordinance or regulation must call for phasing in of broader requirements leading to the following:

Continue to increase non-work related transit mode split by 10% annually over 1984 levels until overall 70% increase is reached (a total of 1,151,555 additional trips by 2010). Set local objectives and provide commensurate mode shift opportunities through carpooling, walking, and bicycling incentive programs. Divert 2% of all trips of 3 miles or less to the bicycle mode, divert 20% of all auto trips of 1/2 mile or less to walking trips, divert 32% of single occupant auto trips to carpools of 2+ persons.

This measure must be paired with enhanced transit, see measure 2g, Transit, and other mode-shift strategies.

The ordinance or regulation would require that baseline non-work trip data be generated. Upon implementation, the jurisdiction would be required to monitor the progress and effectiveness of the ordinance and report results and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

Major implementation issues to be considered are: merchant opposition to costs and/or requirements of providing incentives/facilities; public commitment to a change in lifestyle.

IMPACTS

Positive

The Merchant Transportation Incentives measure can have positive impacts by contributing to improved air quality through a reduction in VMT, improved traffic flow, and changes in modal split. Other positive impacts include: commuter travel cost savings, developer/owner/manager and merchant cost savings through a reduction in parking spaces needed, and a positive community image for the developer/owner/manager and merchant, a reduction in unnecessary trips, the provision of transit to local shopping centers and schools, and the provision of bike and pedestrian facilities.

Negative

- o Possible merchant/developer opposition to costs of providing alternative travel incentives. Possible space limitations; construction costs.
- o Difficult to convince the public that small actions count; wholesale public commitment needed.
- o Difficult to monitor this type ordinance.

LEGISLATIVE/RESEARCH NEEDS

- o Design a model "Non-work Trip Reduction Ordinance" for use by local governments.
- o Compile information on existing and/or planned "merchant transportation incentive programs.
- o Research and quantify emission reduction and transportation activity changes through a pilot study.
- o Assess regional air benefits of existing bike routes/local General Plans.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES

A single emission reduction calculation has been produced for the group of seven mode shift strategies. A 6% transit mode shift is assumed to result from enhanced Regulation XV programs (lowered employer base from 100 to

25), increased average vehicle ridership (AVR) goals at 66 centers, Orange County Transit District established targets, full implementation of all HOV facilities and the transit network in the Regional Mobility Plan.

TIER I

Local government ordinances, Air Element adoptions and legislated tax benefits are assumed to occur, and HOV system programmed at 65%. A 12% emission reduction of the total projected for this measure will occur, and at an assumed 100% level of effectiveness.

TIER II

For the remaining 15 years, emission reductions are to continue at a rate of 6%/year, or 88% of the projected reductions

INDICATORS FOR ALL MODE SHIFT STRATEGIES:

The transit mode shift assumed in all mode shift strategies will reduce 1.73 million work trips and 18.39 million vehicle miles traveled (VMT), saving 0.60 million vehicle hours traveled (VHT). In relation to Baseline, the implementation of this measure will result in a decrease of 4.27% trips, 4.55% VMT, and 2.69% VHT.

TIER I

Implementation during Tier I will reduce .21 million work trips, 2.20 million VMT, and save .07 million VHT.

TIER II

Implementation during Tier II will reduce 1.52 million work trips, 16.19 million VMT, and save 0.53 million VHT.

PRIMARY BENEFIT FOR ALL MODE SHIFT STRATEGIES

TIER I

The seven mode shift strategies will result in a 0.62 T/da ROG reduction by January 1, 1994.

TIER II

Reductions in Tier II amount to 9.64 T/da ROG.

REFERENCES

SCAQMD and SCAG. February 1982. Final Air Quality Management Plan:1982 Revision

SCAG. February 1988. Regional Mobility Plan: Draft






Lamare, Judith Ph.D. (for Sacramento Regional Transit District) Land Use Planning With Transit In Mind.

Santa Monica Place Management, phone, July 1988

AQMP COMMITMENT SCHEDULE

MEASURE : 2.d. MERCHANT TRANSPORTATION INCENTIVES

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA'S | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Local government adoption by January 1, 1991 of non-work trip reduction ordinance to require major retail centers to offer customer mode-shift travel incentives and provide facilities for non-motorized transportation needs.
- o Adoption of SCAQMD Indirect Source regulation by January 1, 1992 to require the above.

2. e. AUTO USE RESTRICTIONS

SUMMARY

SOURCE CATEGORY: Light Duty Auto/Light and Medium Duty Truck

CONTROL METHODS: TIER I

- o Adoption of Air Quality Element into General Plans by July 1, 1990, which will identify the local applicability of requiring special event centers to operate park-n-ride and off-site facility lots, requiring auto free zones, requiring street closure during peak periods, and enhancing transit performance.
- o Adoption by January 1, 1993, of a local auto-free zone ordinance, to require, as applicable, special event centers with occupancies of 10,000+ capacity to establish and operate Park-n-Ride and off-site facility lots with shuttle service, require discounted transit passes to be advertised and offered for sale with event tickets, and require each center to have a transit coordinator to manage traffic flow. (See related Control Measure 2.b.: Parking Management, 2.d.: Merchant Transit Incentives).
- o Require implementation of auto free zones in areas of dense pedestrian activity in conjunction with designated off-street or remote parking facilities (Park-n-Ride/Shuttle services) by January 1, 1994. (See related Control Measure 2.d.: Transit).
- o Require street closures during peak periods of heavy pedestrian activity.
- o Provide enhancement of transit performance and availability in auto restricted zones. (See Control Measure 2.d.).
- o If necessary, adoption of SCAQMD Indirect Source Rule for special event centers, or expansion of Regulation XV to require the above.

TIER II

No additional control methods.

IMPLEMENTING
AGENCIES:

Local government/SCAQMD

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES:

Emission reductions for all Mode Shift Strategies are calculated together and are based on an assumed 6% mode shift.

TIER I

Local governments actions by January 1, 1994 will lead to 12% of total projected emission reductions.

TIER II

Eighty-eight percent of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFITS FOR ALL MODE SHIFT STRATEGIES

TIER I

0.62 T/da ROG reduction by 1994.

TIER II

9.64 T/da ROG reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

The goal of the Auto Use Restrictions measure is to reduce single auto-occupancy trips, VMT, improve traffic flow, reduce pollution caused by mobile sources, and enhance pedestrian activity.

Regulatory History

Auto Use Restrictions was not included as a specific measure in the 1979 or 1982 Plans. However, Measure 016 Indirect Source Controls is a similar approach. It called for the preconstruction review of the construction or modification of an indirect source in order to determine its potential impact on air quality by incorporating specific design guidelines that minimize auto running and idling time.

The City of Los Angeles designed an ordinance requiring street closures during peak periods.

The Hollywood Bowl is an example of a special event facility that manages traffic flow into the facility. Shuttle service is provided through contract with RTD and private bus companies in conjunction with Park-n-Ride lots. Service from the lots is \$2 each way. The shuttle

service is heavily subsidized by Los Angeles County. In FY 1986-87, the subsidy was approximately \$691,000 including Proposition A funds.

CONTROL METHODS

Tier I

- o Local government adoption of Air Quality Elements in General Plans by July 1, 1990, which will identify the local applicability of requiring special event centers to operate park-n-ride and off-site facility lots, requiring auto free zones, requiring street closure during peak periods, and enhancing transit performance.
- o Adopt local ordinances, by January 1, 1993, requiring special event centers such as stadiums, concert halls and amusement parks with potential occupancies of 10,000 or more individuals at a time to establish Park-n-Ride and off-site parking facility lots at remote locations. The ordinance would require the provision of shuttle service to and from events, increased parking fees at the facility, and require the operator to advertise and offer for sale discounted transit passes with event tickets. It would include local objectives and provide commensurate mode shift opportunities for carpooling. An on-site transit coordinator would manage and monitor the transit programs to ensure their success, as well as continue to develop methods to reduce VMT.
- o The ordinances or Air Elements would specify requirements for new development and pedestrian malls and the coordination with (existing and planned) Park-n-Ride lots, rail service and bus lines and require special event centers to be located along major transit corridors, tied into transit rail lines.
- o The ordinances or Air Elements would restrict vehicle access to major activity centers to shuttles via peripheral parking, transit, and non-motorized modes; require local governments to close streets as needed. The criteria for street closure are determined by local government and consist of heavy peak-period congestion and lack of parking, combined with existing or potential heavy pedestrian activity. Auto restricted areas must be adequately served by transit/shuttle/park'n'ride.
- o Local government must provide enhancement of transit performance and availability in auto restricted zones and make the transit system user friendly; improve the local transit system to tie into major truck lines, develop fee structures and passes to facilitate passenger movement between systems, and improved bus service (time schedule, performance, and connections). Provide computerized transit directories at major event centers, major activity centers, and any other area where parking is severely limited. Establish developer fees to offset transit development costs and further develop incentives to encourage local government to develop localized transit systems.

Tier II

Through legislative implementation and/or local government ordinances, manage access to major activity centers to transit, shuttles, and/or non-motorized modes. Prohibit single auto-occupancy vehicle access to major activity centers - require 2 persons per car to park at any conference/convention/entertainment center.

The ordinance, rule, or element would require that baseline trip, VMT, and ridership data be generated. Upon implementation, the jurisdiction would be required to monitor the progress and effectiveness of the ordinance and report results and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

Possible implementation issues to be considered are: construction costs, merchant opposition, substantial government subsidy required for transit and park-n-ride shuttle/lot operation.

IMPACTS

Positive

The Auto Use Restrictions measure can contribute to improved air quality through a reduction in VMT, improved traffic flow, and changes in modal split. Other positive impacts include: commuter travel cost savings, elimination of the need to build additional parking lots, improvement of the CBD pedestrian environment, improved access to the CBD, improved transit service and an increase in transit ridership.

Negative

There will be merchant/developer/public opposition.

LEGISLATIVE/RESEARCH NEEDS

- o Survey local needs and design a "Model Facility Ordinance" for local government use.
- o Research and design a model "Street Closure Circulation Element" for local government use in General Plan development to include an assessment of options.
- o Development of an Air Quality Element for local government General Plans.
- o Development of an Indirect Source Regulation by SCAQMD.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES

A single emission reduction calculation has been produced for the group of seven mode shift strategies. A 6% transit mode shift is assumed to result from enhanced Regulation XV programs (lowered employer base from 100 to 25), increased average vehicle ridership (AVR) goals at 66 centers, Orange County Transit District established targets, full implementation of all HOV facilities and the transit network in the Regional Mobility Plan.

TIER I

Local government ordinances, Air Element adoptions and legislated tax benefits are assumed to occur, and HOV system programmed at 65%. A 12% emission reduction of the total projected for this measure will occur, and at an assumed 100% level of effectiveness.

TIER II

For the remaining 15 years, emission reductions are to continue at a rate of 6%/year, or 88% of the projected reductions.

INDICATORS FOR ALL MODE SHIFT STRATEGIES:

The transit mode shift assumed in all mode shift strategies will reduce 1.73 million work trips and 18.39 million vehicle miles traveled (VMT), saving 0.60 million vehicle hours traveled (VHT). In relation to Baseline, the implementation of this measure will result in a decrease of 4.27% trips, 4.55% VMT, and 2.69% VHT.

TIER I

Implementation during Tier I will reduce .21 million work trips, 2.20 million VMT, and save .07 million VHT.

TIER II

Implementation during Tier II will reduce 1.52 million work trips, 16.19 million VMT, and save 0.53 million VHT.

PRIMARY BENEFIT FOR ALL MODE SHIFT STRATEGIES

TIER I

The seven mode shift strategies will result in a 0.62 T/da ROG reduction by January 1, 1994.

TIER II

Reductions in Tier II amount to 9.64 T/da ROG.

REFERENCES

SCAG Regional Advisory Council. January 1986. Transportation Policy Recommendations. The Olympic Legacy: Let's Keep it Moving

Alameda Contra Costa Transit District. Guide For Including Public Transit In Land Use Planning.

City of Portland, Oregon. October 1983. Arterial Street Classification Policy.

Lamare, Judith Ph.D. (for Sacramento Regional Transit District). Land Use Planning With Transit In Mind.

Metropolitan Transportation Commission. December 1984. Traffic Mitigation Reference Guide.

AQMP COMMITMENT SCHEDULE

MEASURE : 2.e. AUTO USE RESTRICTIONS

| COMMITMENT | | | | | |
|---------------------|---|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | ### | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### ### | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- Local government to adopt an Air Quality Element into each General Plan by July 1, 1990, which will identify the local applicability of requiring special event centers to operate park-n-ride and off-site facility lots, requiring auto free zones, requiring street closure during peak periods, and enhancing transit performance.
- Local government to adopt a local auto free zone ordinance by January 1, 1993 to require the above.
- If necessary, adoption of SCAQMD Indirect Source Rule for special events centers or expansion of Regulation XV to require the above.

2. f. HOV FACILITIES

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SUMMARY

SOURCE CATEGORY: Light duty auto, light and medium duty trucks

CONTROL METHODS: TIER I

Implement the constrained HOV Element of the adopted Regional Mobility Plan, and provide HOV by-pass lanes at metered ramps where feasible.

TIER II

Obtain funding for unconstrained improvements and implement remaining program.

Those actions, facilities, and programs, which will be constructed or completed under existing or present funding capabilities, are called the "Constrained Program." Those actions, facilities, and programs, which require additional sources of revenue to be implemented, are called the "Unconstrained Program."

IMPLEMENTING

AGENCIES: CALTRANS

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES:

Emission reductions for all Mode Shift Strategies are calculated together and are based on an assumed 6% mode shift.

TIER I

Local governments actions, by January 1, 1994 will lead to 12% of total projected emission reductions.

TIER II

Eighty-eight percent of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFITS FOR ALL MODE SHIFT STRATEGIES:

TIER I

0.62 T/da ROG reduction by 1994.

TIER II

9.64 T/da ROG reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

It has long been recognized that increased carpooling could provide significant air quality and congestion relief benefits, as well as a reduction in infrastructure needs. Despite continued marketing efforts by public and private agencies to promote ridesharing, observed vehicle occupancies on freeways has continued to decline. With the exception of periods of gasoline shortages, the only exceptions to the general trend have occurred in those corridors with available High Occupancy Vehicle (HOV) Lanes (Rte 91 in L.A. Co., Rte 55 in Orange County, and I-10 in L.A. Co.). Average vehicle occupancies are markedly higher on those facilities with HOV lanes than on other freeway facilities in the region. Recent survey information strongly suggests that the time savings afforded by HOV lanes is an effective inducement to ridesharing.

Regulatory History

The 1979 AQMP contained measure #H-85, mandating the construction of HOV facilities on the Harbor, Santa Ana, and Century Freeways, as well as a 2 mile extension of the El Monte Busway to Union Station. Although this measure was not included in the 1982 update to the AQMP, all four projects are currently either under construction or programmed for construction in the next few years. No other regulations address the implementation of HOV lanes.

CONTROL METHODS

The proposed method of control is to support the programming and implementation of the HOV facilities identified in the 1988 Regional Mobility Plan. Full implementation of all HOV lane provisions is assumed in estimating changes in transportation activity. The 1988 RMP calls for the construction of 983 lane-miles of HOV facilities.

(Refer to the Regional Mobility Plan for a list of HOV facilities.)

The implementing agencies would require that baseline HOV and vehicle occupancy data be generated. Upon implementation, the agencies would be required to monitor the progress and effectiveness of the strategy and report results and baseline data annually to SCAG for incorporation into the RFP Report.

Those actions, facilities, and programs, which will be constructed or completed under existing or present funding capabilities, are called the "Constrained Program." Those actions, facilities, and programs, which

require additional sources of revenue to be implemented, are called the "Unconstrained Program."

IMPLEMENTATION ISSUES

Potential public and public official opposition to HOV lanes in specific corridors may present a significant obstacle to implementation. Significant engineering difficulties can be anticipated.

LEGISLATIVE/RESEARCH NEEDS

Continued research into the effectiveness of HOV lanes at inducing and facilitating increased carpooling and transit use will be necessary, as well as quantification of emission benefits.

Action will be necessary to establish/preserve a favorable state legislative climate for HOV lane implementation.

Legislative action may be required to provide CHP enforcement budget.

Action will be required to implement financial strategies developed through the Regional Mobility Plan.

OTHER IMPACTS

Implementation of the HOV Element of the Regional Mobility Plan will contribute significantly to ridesharing, because HOV lanes provide a time advantage to car-and van-pools; this, in turn, enhances mobility in the form of reduced vehicle trips, reduced vehicle miles of travel, and reduced travel time and delay. Some negative environmental impacts will be associated with the construction of the HOV projects, such as dust, noise, energy consumption, short-term traffic disruption. Some negative visual and noise impacts may result from project implementation.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES

A single emission reduction calculation has been produced for the group of seven mode shift strategies. A 6% transit mode shift is assumed to result from enhanced Regulation XV programs (lowered employer base from 100 to 25), increased average vehicle ridership (AVR) goals at 66 centers, Orange County Transit District established targets, full implementation of all HOV facilities and the transit network in the Regional Mobility Plan.

TIER I

Local government ordinances, Air Element adoptions and legislated tax benefits are assumed to occur, and HOV system programmed at 65%. A 12% emission reduction of the total projected for this measure will occur, and at an assumed 100% level of effectiveness.

TIER II

For the remaining 15 years, emission reductions are to continue at a rate of 6%/year, or 88% of the projected reductions.

INDICATORS FOR ALL MODE SHIFT STRATEGIES:

The transit mode shift assumed in all mode shift strategies will reduce 1.73 million work trips and 18.39 million vehicle miles traveled (VMT), saving 0.60 million vehicle hours traveled (VHT). In relation to Baseline, the implementation of this measure will result in a decrease of 4.27% trips, 4.55% VMT, and 2.69% VHT.

TIER I

Implementation during Tier I will reduce 0.21 million work trips, 2.21 million VMT, and save 0.06 million VHT.

TIER II

Implementation during Tier II will reduce 1.52 million work trips, 16.18 million VMT, and save 0.42 million VHT.

PRIMARY BENEFIT FOR ALL MODE SHIFT STRATEGIES

TIER I

The seven mode shift strategies will result in a 0.62 T/da ROG reduction by January 1, 1994.

TIER II

Reductions in Tier II amount to 9.64 T/da ROG.

REFERENCES

HOV Facilities Plan: A High Occupancy Vehicle Lane Study, SCAG, 1987; Draft Route 55 Commuter Market Study, OCTD, 1987.

Preliminary results of Travel Behavior Study on the Costa Mesa Freeway, Institute for Transportation Studies, 1987.

Freeway Lanes for High-Occupancy Vehicles, State of California Department of Transportation, December, 1973.

A Program for Preferential Treatment, Caltrans District 7, July, 1974.

San Bernardino Freeway Express Busway Evaluation of Mixed-Mode Operations Interim Report - Stage I, Crain & Associates, August, 1977.

Changes in Travel in the Shirley Highway Corridor 1983-1986, E. D. Arnold, Virginia Transportation Research Council, June, 1987.

Transitway Projects, Metropolitan Transit Authority of Harris County Texas,
October, 1987.

AQMP COMMITMENT SCHEDULE

MEASURE : 2.f. HOV FACILITIES

| COMMITMENT | | | | | |
|---------------------|---|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | ### | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | ### | ### | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- Implement the Constrained HOV Element of the adopted Regional Mobility Plan. (This project list is based on funding available during the next 20 years.)
- Secure funding for the Unconstrained HOV Element of the adopted Regional Mobility Plan. (Tier II)

2. g. TRANSIT IMPROVEMENTS

SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Truck

CONTROL METHODS: TIER I (Constrained Program)

- o LA/Long Beach Light Rail -- 20 miles
- o Metrorail, Locally Preferred Alternative
- o Additional 10 miles of heavy rail
- o Norwalk to El Segundo Light Rail -- 17 miles
- o Increase in bus fleet for Omnitrans (San Bernardino) from 52 to 92 for peak hour service
- o San Fernando Valley Light or Heavy Rail - 17 miles
- o Coast line Light Rail - 15 miles
- o Pasadena Line Light Rail - 8 miles
- o San Fernando Valley Light Rail - 12 miles
- o Increase Express bus service by OCTD on freeway commuter routes by 140 buses

TIER II

Obtain funding for unconstrained improvements and implement remaining program.

Those actions, facilities, and programs, which will be constructed or completed under existing or present funding capabilities, are called the "Constrained Program." Those actions, facilities, and programs, which require additional sources of revenue to be implemented, are called the "Unconstrained Program."

IMPLEMENTING
AGENCIES:

LACTC (Prop. A rail systems), RTD, OCTD, public and private transit providers, or other governmental authority which could be created, e.g., a multi-county transit authority.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES:

Emission reductions for all Mode Shift Strategies are calculated together and are based on an assumed 6% mode shift.

TIER I

Local governments actions by January 1, 1994 will lead to 12% of total projected emission reductions.

TIER II

Eighty-eight of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFITS FOR ALL MODE SHIFT STRATEGIES

TIER I

0.62 T/da ROG reduction by 1994.

TIER II

9.64 T/da ROG reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

The goal of the transit improvements control measure is to reduce mobile source emissions by inducing shifts in transportation modes; from light and medium duty vehicles to transit vehicles. Current trends show a decrease in transit ridership on the public carriers.

Regulatory History

The 1979 AQMP control measure H-89 proposed expanded local transit service throughout the region through the addition of 1000 buses. Expanded transit was not called for in the 1982 Plan.

CONTROL METHODS

TIER I (Constrained)

- o LA/Long Beach Light Rail -- 20 miles
- o Metrorail, Locally Preferred Alternative: Union Station to North Hollywood, Western to Wilshire.
- o An additional 10 miles of heavy rail, alignment to be determined (east or west).
- o Norwalk to El Segundo Light Rail -- 17 miles.
- o Increase in bus fleet for Omnitrans (San Bernardino) from 52 to 92 for peak hour service
- o San Fernando Valley Light or Heavy Rail -- 17 miles
- o Coast Line Light Rail -- 15 miles
- o Pasadena Line Light Rail -- 8 miles
- o San Fernando Valley Light Rail -- 12 miles
- o Increase Express bus service by OCTD on freeway commuter routes by 140 buses

Under the constrained transit program, the Region will add five light rail lines and two segments of heavy rail through the Los Angeles Proposition A program. Orange County will build approximately \$200 million of its \$350 million transit way, and will add 140 express buses to its fleet. San Bernardino will add 40 buses to the Omnitrans fleet. However, both SCRTD and Riverside Transit report that they can foresee no growth in their bus fleets in the next twenty years and, in fact, will be unable even to replace the full fleet as required with newer, non-polluting buses. Other carriers have only minor additions planned. Thus, with the exception of the rail transit program in Los Angeles and the Transitway system in Orange County, there will be no additions to capacity in the transit system under the constrained funding.

IMPLEMENTATION ISSUES

(1) Sources of revenues must be identified (Federal, State and Local programs). (2) Transit ridership is decreasing and therefore may be a stumbling block, politically, to future transit development. (3) A plan must be implemented to induce increased transit ridership.

OTHER IMPACTS:

Positive impacts would be decreased congestion which results in improved speeds. Reduced costs for business and individuals resulting from savings in vehicle costs and time (not lost) due to reduced congestion. Reduced costs to employees who switch from single car occupancy to ridesharing and rapid transit. A more comprehensive transportation system giving better access to all parts of the region. Reduced negative health impact as a result of cleaner air. The adopted RMP could call for higher gas taxes which may mean a greater degree of gas conservation.

Potential negative impacts are some increase in emissions from electric power generation needed for transit operations; potential NOx emissions increase from increased speeds; neighborhood disruption and changes due to the introduction of transit into neighborhoods. Potential increase in stress during the work trip due to sharing space, home delays at pick-up and concerns over public safety.

LEGISLATIVE/RESEARCH NEEDS

Legislative authority is needed to create an entity such as an intra-county joint powers board. Although this is not currently politically popular, given the intra-county competition for transit monies and the power struggles over local transit planning, it is a concept worth investigating. If any meaningful progress is to be made in decreasing traffic congestion on a regional basis, then counties must work together as a region. One of the ways this can be accomplished is to pool together monetary resources through a regional entity that can plan and develop a regional transit system.

IMPLEMENTATION ASSUMPTIONS FOR ALL MODE SHIFT STRATEGIES

A single emission reduction calculation has been produced for the group of seven mode shift strategies. A 6% transit mode shift is assumed to result from enhanced Regulation XV programs (lowered employer base from 100 to 25), increased average vehicle ridership (AVR) goals at 66 centers, Orange County Transit District established targets, full implementation of all HOV facilities and the transit network in the Regional Mobility Plan.

TIER I

Local government ordinances, Air Element adoptions and legislated tax benefits are assumed to occur, and HOV system programmed at 65%. A 12% emission reduction of the total projected for this measure will occur, and at an assumed 100% level of effectiveness.

TIER II

For the remaining 15 years, emission reductions are to continue at a rate of 6%/year for a total reduction of 88%.

INDICATORS FOR ALL MODE SHIFT STRATEGIES:

The transit mode shift assumed in all mode shift strategies will reduce 1.73 million work trips and 18.39 million vehicle miles traveled (VMT), saving 0.60 million vehicle hours traveled (VHT). In relation to Baseline, the implementation of this measure will result in a decrease of 4.27% trips, 4.55% VMT, and 2.69% VHT.

TIER I

Implementation during Tier I will reduce 0.21 million work trips, 2.21 million VMT, and save 0.06 million VHT.

TIER II

Implementation during Tier II will reduce 1.52 million work trips, 16.18 million VMT, and save 0.42 million VHT.

PRIMARY BENEFIT FOR ALL MODE SHIFT STRATEGIES

TIER I

The seven mode shift strategies will result in a 0.62 T/da ROG reduction by January 1, 1994.

TIER II

Reductions in Tier II amount to 9.64 T/da ROG.

REFERENCES

Air Quality Management Plan, Southern California Association of Governments (SCAG) & South Coast Air Quality Management District, 1979; Draft Financial Analysis of Alternative Strategies for the Regional Mobility Plan, SCAG, 1988; Draft Regional Mobility Plan, SCAG, 1988.

AQMP COMMITMENT SCHEDULE

MEASURE : 2.g. TRANSIT IMPROVEMENTS

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | <div> <div>↑</div> <div>EXISTING LOCAL GOVERNMENT OPTIONS</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o GENERAL PLANS o RHNA | | | |
| FACILITATE | | <ul style="list-style-type: none"> o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | <ul style="list-style-type: none"> o ZONING o BUS. LICENSES | | | |
| ASSIST | | <ul style="list-style-type: none"> o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | | |
| AGREEMENTS | <div> <div>↑</div> <div>COOPERATIVE PARTNERSHIPS FORGED</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o MOU'S & JPA's | | | |
| LEGISLATION | | <ul style="list-style-type: none"> o INCREASE \$ o NEW AUTHORITIES | ### | ### | |
| REGIONAL REGULATION | <div> <div>↓</div> <div>TOP DOWN CONTROL</div> </div> | <ul style="list-style-type: none"> o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Implement the Constrained Transit Improvements in the adopted Regional Mobility Plan. (This project list is based on funding available during the next 20 years.)
- o Secure funding for the Unconstrained Transit Improvements in of the adopted Regional Mobility Plan. (Tier II)

3. GOODS MOVEMENT

3. a. TRUCK DISPATCHING, RESCHEDULING & REROUTING

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SUMMARY

SOURCE CATEGORY: Light Duty Auto/Light, Medium, and Heavy Duty Truck

CONTROL METHODS: TIER I

- o Adopt local Air Quality Elements in General Plans by July 1, 1990, to alter truck delivery by re-routing trucks and changing the time of delivery.
- o Adopt local ordinances and MOUs by July 1, 1990, to alter truck delivery.
- o If necessary, adopt by July 1, 1991, a SCAQMD Truck Delivery Rule to alter truck activity.

TIER II

Implement computerized navigation and dispatching systems by 1995.

IMPLEMENTING AGENCIES:

Local governments and the private sector, CHP, SCAQMD

IMPLEMENTATION ASSUMPTIONS FOR GOODS MOVEMENT STRATEGIES:

Tier I

Local government action by 1990 leading to 9% of total projected emission reductions to 1994.

Tier II

Ninety-one percent of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT FOR GOODS MOVEMENT STRATEGIES

Tier I

0.85 T/da ROG reduction by 1994.

Tier II

8.93 T/da ROG reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

The measure calls for alteration of truck delivery schedules by re-routing trucks away from central business districts and major activity centers during peak commute hours. Deliveries would be scheduled to off peak hours or restricted to specific freeway/highway routes during AM and PM peak hours. See Measure #5, Non-Recurrent Congestion for a discussion of truck-involved accident prevention.

Background

During the 1984 summer Olympic Games, voluntary rerouting and rescheduling was implemented in the Southern California region. The California Trucking Association negotiated a five-week labor contract waiver with the Teamsters Union. The waiver then allowed Southern California truckers to shift their travel routes and schedules during the Olympic period.

The "Olympic Impact Report" prepared by the Southern California Association of Governments (SCAG) describes the major hourly and directional variations in truck traffic that occurred with respect to normal operations. Caltrans, in conjunction with the Olympic monitoring network, set up a traffic count station at the Santa Monica Freeway near the Olympic activities. They observed an increase of 41 percent inbound and 98 percent outbound of truck volumes after 6 PM. Mid-day truck volumes decreased 10-49 percent. Overall truck traffic decreased 15 percent inbound and 8 percent outbound on the Santa Monica Freeway.

During July and August of 1984, however, more trucks passed through Southern California than during similar periods in the past. Weigh station records indicate that August truck volumes averaged approximately 12 percent more at all stations than in June. A substantial decrease in truck traffic on portions of urban freeways in conjunction with significantly increased truck traffic on the highway system as a whole, demonstrates the success of route diversion.

Truck accidents showed a significant decrease during the period of the Olympic Games. This fact is believed to have had a significant impact on traffic conditions for this period. During the three week period around the Olympic Games only seven truck accidents were reported. This is a 58% decrease in the normal accident rate, despite a 12% increase in overall truck traffic in the region.

Regulatory History

Measures to manage the operation of heavy duty trucks for air quality reasons were called for in the 1979 AQMP. H72 Increased Trucking

Efficiency sought to reduce truck VMT for selected freight movement through pricing incentives for truckers, and the development of a brokerage-dispatching system to decrease empty backhauls.

H118 Reduce Non-Recurrent Congestion called for the automation of traffic management procedures by expanding electronic surveillance and changeable message signing; and by implementing closed circuit television and highway advisory radio at designated locations along the network, permitting improved detection and response.

The 1982 plan brought the same measure forward, K4 Reduce Nonrecurrent Congestion.

Restriction for reasons of traffic congestion and safety have been attempted by various state and local governments. Generally they have been held to be in conflict with existing federal laws concerning access to the Surface Transportation Assistance Act (STAA) system.

Voluntary measures to control truck deliveries have been utilized in conjunction with special events, most notably the 1984 Olympic Games. Off peak or staggered delivery measures are being tried on a voluntary basis by the automobile carriers represented by the California Trucking Association (CTA). The CTA has adopted a resolution of support for expanded use of peak delivery.

The greatest apparent barriers to more widespread use of off peak or staggered delivery hour for heavy duty trucks are resistance by shippers and local restrictions on night delivery. Local ordinances on night operations, noise levels, and parking restrict trucks and/or companies from making or accepting off peak deliveries. State law prohibits the delivery of alcoholic beverages during off peak hours.

A recent study conducted by SCAG for SCAQMD indicated that 67 percent of local jurisdictions restrict nighttime construction activity adjacent to residential areas and 65 percent have comprehensive noise ordinances that include decibel-based limits on nighttime noise in residential areas. In addition, 19 percent of local jurisdictions restrict nighttime loading/unloading activities adjacent to residential areas. Such ordinances, which are usually enforced on a complaint basis, limit the ability of trucks and companies to make or accept nighttime deliveries in certain locations. State law prohibits the delivery of alcoholic beverages, except between the hours of 6 a.m. and 8 p.m. Monday through Saturday.

Because of obvious benefits to companies and the value to public relations of the strategy, some businesses have voluntarily limited operations during hours of heavy commute. For example, Chevron USA instituted a voluntary program in August 1988, to operate its tankers during off-peak hours only, and called on its competitors to do likewise.

CONTROL METHODS

Emissions from congestion caused by the operation of heavy duty trucks during the hours of heaviest commuting can be reduced by:

- o limiting operation during peak hours
- o reducing truck accidents
- o reduce detection and response time for accident clean-up
- o routing away from congested areas.

Tier I

These steps will be incorporated in local ordinances and MOUs by July 1, 1991, or, if necessary, by SCAQMD regulation by July 1, 1992, which would:

Ban Trucks from Freeways and Arterials During Peak Periods

Establish restrictions on operating times of heavy duty vehicles and prohibit their operation during these periods on congested portions of freeways and arterials.

Establish Peak Pricing for Peak Period Truck Operations

Establish special surcharges for the operation of commercial vehicles during periods of peak traffic congestion on congested portions of freeways and arterials. Those operating without a permit would be fined or penalized.

Shipping and Receiving Plans

Establish a requirement that entities shipping or receiving high volumes of goods by heavy duty truck develop a shipping and receiving plan which includes an off-peak delivery element. Such a plan would specify how and when shipments are to be shipped and received. The plan would also include staffing levels necessary to handle such off-peak shipping.

Special Truck Operations

Measures to restrict or regulate truck deliveries will require special measures for different types of trucking activity. Special truck operators, such as construction suppliers, concrete delivery, rock and gravel haulers, package delivery and air freight forwarders, dairies, and grocers, would develop voluntary plans to limit operations during peak periods.

Caltrans will take steps by 1990 to achieve the following:

Interstate Operations

Undertake measures to implement truck bypass of congested locations in the basin during the peak periods. Implement permanent bypass arrangements for trucks operating through the basin but not destined for points in the

basin. This would involve routing north-south traffic from the San Diego region via I-15 and State 138 to I-5 and vice versa. It would similarly involve diverting traffic from the east to the Bay area and Central Valley from I-10 via State 138 to I-5. This would route trucks entirely out of the basin reducing direct truck emissions, as well as congestion related emissions.

Improved Emergency Response

Improve surveillance of and response to major truck accidents through implementation of the Traffic Management Team concept in conjunction with the "Smart" streets program. Reduce accident response and clearance through the use of roving service and tow vehicles.

Real Time Traffic Congestion Information System

Implement real-time continuous traffic information broadcast system to warn commercial vehicles of traffic congestion locations, accidents or other impediments. Real time data services over a continuous broadcast system would provide expected delay and alternate route information to drivers in vehicles and to dispatchers.

Tier II

By 1995, Caltrans will implement:

Computerized Navigation and Dispatching Systems

Integrate real time traffic data with computerized navigation and dispatching systems to avoid routing vehicles through congested areas. This technology will allow commercial vehicles to avoid recurrent or accident related delays.

The ordinance would require that baseline truck trip and VMT facilities, and programs be generated. Upon implementation, the jurisdiction would be required to monitor the progress and effectiveness of the ordinance and report results and baseline data annually to SCAG for incorporation into the RFP Report.

EMISSION REDUCTIONS

Traffic congestion caused by the presence of heavy duty trucks in the traffic stream reduces the operating efficiency of other vehicles present. Reduction of the number of heavy duty trucks operating in congested periods will reduce emissions by increasing operating speeds and efficiency reduction emissions from all pollutants, except NOX. Reductions of emissions would depend on the number of trucks operating during congested periods on various route segments and the difference in operating speed that would occur.

Reduction in the number of truck accidents would result in less congestion traffic on all routes so impacted. The reduction of emissions would come

from the increased efficiency of the remaining traffic operating at the normal speed for that route segment.

COST EFFECTIVENESS

The cost effectiveness of this measure would depend on a number of factors. The degree of implementation achieved and the costs associated with the shift to off peak delivery would be important factors in determining cost effectiveness. Fuel savings, increased labor productivity, reduced accident costs and associated losses would off-set some or possibly all of the costs incurred, although distribution of benefits and costs may be skewed. Quantification will require further study.

LEGISLATIVE/RESEARCH NEEDS

Legislation is needed to provide financial incentives and demonstration projects.

IMPLEMENTATION ASSUMPTIONS FOR GOODS MOVEMENT STRATEGIES

Tier I

Local government will adopt ordinances by January 1, 1990; plan formulation will take place to January 1, 1991. Emission reductions will accrue from 1991 to 1993 at a rate of 3% per year for three years or 9% of the total projected emissions.

Tier II

In Tier II, emission reductions are assumed at 6%/yr for 15 years or 91% of total projected emission.

INDICATORS FOR GOODS MOVEMENT STRATEGIES

This measure would reduce truck trips by 50 percent during peak vehicle hours of delay (VHT) commute periods, or the equivalent of 9 million VMT.

PRIMARY BENEFIT FOR GOODS MOVEMENT STRATEGIES

Tier I

The two Goods Movement Strategies will result in .70 T/da ROG reduction by January 1, 1994.






Tier II

Reductions in Tier II amount to 7.14 T/da ROG reduction by 2010.
Measure 3.

AQMP COMMITMENT SCHEDULE

MEASURE : 3.a. TRUCK DISPATCHING, RESCHEDULING,
AND RE-ROUTING

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|--|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### | ### | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Local governments to adopt Air Quality Elements in General Plans by July 1, 1990, to alter truck delivery routes and local delivery schedules.
- o Adopt local government ordinances, MOU's by July 1, 1990.
- o Adopt a SCAQMD Truck Delivery Rule by July 1, 1991 if necessary.
- o Assess needs for Federal regulation to assist in the implementation of this measure.

3.b. DIVERTING PORT-RELATED TRUCK TRAFFIC TO RAIL

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SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Truck, Heavy Duty Truck, Trains

CONTROL METHODS: Tier I

- o Ports of Los Angeles and Long Beach develop plans for the development of on-dock yards or near dock yards between 1988 and 1990.

- o Ports of Los Angeles and Long Beach to initiate construction of new on-dock yards between 1989 and 1992.

Tier II

- o Ports of Los Angeles and Long Beach continue to implement new on-dock or near dock yards between 1993 and 2010.

IMPLEMENTING
AGENCIES:

Ports of Los Angeles and Long Beach, Railroads

IMPLEMENTATION ASSUMPTIONS FOR GOODS MOVEMENT STRATEGIES:

Tier I

Local government action by 1990 leading to 9% of total projected emission reductions to 1994.

Tier II

Emission reductions at rate of 6%/year for 15 years, or 90% of total reductions.

PRIMARY BENEFIT FOR GOODS MOVEMENT STRATEGIES:

Tier I

0.85 tons/day ROG reduction by 2010.

Tier II

8.93 tons/day ROG reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

In 1986 the Intermodal Container Transfer Facility (ICTF) began operations. Marine containers are trucked from the docks to this intermodal rail yard, which is located about 4.5 miles from the Ports. Before the ICTF began operations, containers to be shipped on the Southern Pacific Railroad would be trucked to the SP intermodal yard in downtown Los Angeles -- a distance of about 25 miles. Thus, the ICTF has resulted in a considerable savings in truck-miles of travel and associated emissions.

Recently, International Transportation Service, Inc. has proposed to develop an on-dock loading yard at the Port of Long Beach. This would allow ITS to expand their operations to five loaded trains per week. Long Beach Container Terminal has also recently filed an application with the Port of Long Beach to develop an on-dock loading yard. These facilities would not require any trucking of containers, in that the trains would come directly to the dock for loading.

In the long term, the ports plan to develop intermodal container transfer facilities on the proposed landfills as part of their "2020 Plan".

Regulatory History

The 1982 Plan called for J1 Truck Freight Consolidation Terminals. This measure called for small shipments going into, coming out of, or moving within an area to be routed through a single or limited number of consolidation terminals.

The Ports of Los Angeles and Long Beach are responsible for developing port master plans, which specify the use of port property and terminal development.

CONTROL METHODS

This measure is designed to reduce container truck traffic from the Ports of Los Angeles and Long Beach by developing near-dock or on-dock loading yards. On-dock yards would not require any trucking of containers, in that trains would come directly to the dock for loading.

The ports of Los Angeles and Long Beach would develop plans for the development of on-dock yards or additional near-dock yards between 1988 and 1990. The yards would be developed in coordination with the affected railroads, shipping lines, and neighboring communities. Mitigation plans would also be developed to consider the adverse impact of additional train traffic through residential neighborhoods.

The ports of Los Angeles and Long Beach would initiate construction of new on-dock yards between 1989 and 1992. Implementation of new on-dock or near dock yards would continue through 2010.

The implementing agencies would be required to generate truck emissions, Truck VMT and train emissions baseline data. Upon implementation, the agencies would be required to monitor the progress and effectiveness of the improvements, and report the results and baseline data annually to SCAG for incorporation into RFP Report.

CONTROL COST

Costs for developing on-dock systems will depend on whether existing lands are used or whether only the new landfills would be used. The existing ICTF cost over \$60 million to construct. The capital costs will be offset by savings in operations. The use of on-dock loading may save from \$59 to \$90 per container by eliminating the drayage and additional box handling.

OTHER IMPACTS

Reducing truck traffic on the Long Beach and Harbor Freeways would not only lessen congestion, but it would also promote safety on those facilities.

On-dock systems may improve the ports' competitive advantage with respect to other west coast ports.

Developing on-dock loading yards will result in additional train traffic between the ports and downtown Los Angeles. The impacts of the additional trains will need to be mitigated. In the long run, the proposed consolidated rail corridor along Alameda Street, which would include at least 16 grade separations, could be the principal mitigation measure for on-dock services.

To some extent, the on-dock yards would be competing for the same traffic as the Southern Pacific's Intermodal Container Transfer Facility. It is possible that traffic could be diverted away from the ICTF, which is naturally of concern to the Southern Pacific.

IMPLEMENTATION ISSUES

One of the key issues facing the ports is that on-dock services might result in shifts in the market shares for containerized cargo of the three competing railroads (Santa Fe, Southern Pacific, and Union Pacific.) Union Pacific and Santa Fe are both lobbying for on-dock services, and the Southern Pacific is opposed, because of the heavy investment it has made in the ICTF.

On the other hand the ports are facing increased competition from other west coast ports which have already built or are planning to build on-dock loading services.

LEGISLATIVE\RESEARCH NEEDS

A detailed feasibility study of on-dock yards and their impacts should be conducted.

IMPLEMENTATION ASSUMPTIONS FOR GOODS MOVEMENT STRATEGIES

The Ports of Los Angeles and Long Beach have recently updated their commodity forecasts to the years 2000, 2010, and 2020. Containerized cargo is estimated to increase from 1.47 million twenty-foot-equivalent units (TEUs) in 1985 to 3.24 Million TEUs in the year 2000 and 5.35 million TEUs by 2010. These forecasts represent loaded containers. The ports estimate that an additional 25% should be added to these figures to account for empty containers. Currently about 35% of the containers are considered "bridge" traffic; i.e., containers that are placed on trains bound for locations beyond the Southern California area. The remaining 65% of the containers are generated by or destined for the local Southern California market.

The ports indicate that by the year 2020, bridge traffic might account for 50% of the total container market. For the purpose of this analysis, it is assumed that bridge traffic will amount to 40% of the market in the year 2000 and 45% in the year 2010. Bridge traffic is therefore estimated to be 1.62 million TEUs in 2000 and 3.01 million TEUs in 2010.

Currently the ICTF (a "near-dock" loading yard) handles about 50% of the bridge traffic. For this analysis, it is assumed that with the construction of new facilities, on-dock or near-dock services would account for 65% of all bridge traffic by the year 2000 and 80% by 2010. These calculations assume that each truck would carry either a 40-foot container or a 20-foot container, and that 85% of the containers are of the 40-foot variety, and 15% are 20 feet long. The figures also assume that the average one-way trip is 23 miles. The savings in truck trips noted above include the return trip as well.

The savings in truck emissions would be partially offset by increases in train emissions. Assuming double stack operations, it is assumed that the equivalent of 200 40-foot containers would be loaded on a train. This translates into 600 additional train trips per year in 2000 and 2,250 train trips in 2010. Assuming an average of 23 miles at 20 miles per hour, each train would take roughly 1.15 hours to travel from the ports to the downtown L.A. area. The resulting increases in train hours of operation would be 690 per year in 2000 and 2,598 per year in 2010. Each train is assumed to have 4 locomotives.

Tier I

This measure assumes that 9% of the emission reductions will occur by January 1, 1994 through the Ports of Los Angeles and Long Beach developing plans for on-dock and near-dock facilities by 1990, and initiating construction between 1989 and 1992.

Tier II

This measure assumes that 91% of the emission reductions will occur between 1994 and 2010 through the Ports of Los Angeles and Long Beach continuing to implement new on-dock or near dock yards during this time period.

INDICATORS FOR GOODS MOVEMENT STRATEGIES

Tier I

The numbers below represent the combined daily changes in transportation activity expected for the implementation of both Goods Movements Measures by 1994.

1994

| | |
|------------------------------------|---------|
| Truck Trips (yearly) | 88,200 |
| Truck VMT Reduction (daily) | 799,041 |
| VHT Reduction (All Traffic, daily) | 21,480 |

Tier II

The numbers below represent the combined daily changes in transportation activity expected for the implementation of both Goods Movements Measures between 1994 and 2010.

2010

| | |
|------------------------------------|-----------|
| Truck trips (yearly) | 891,800 |
| Truck VMT Reduction (daily) | 8,079,201 |
| VHT Reduction (All Traffic, daily) | 217,206 |

PRIMARY BENEFIT FOR GOODS MOVEMENT STRATEGIES

Tier I

ROG will be reduced by 0.85 tons/day by 1994.

Tier II

ROG will be reduced by 8.93 tons/day by 2010.

REFERENCES






Port of Long Beach, Draft Environmental Impact Report, International Transportation Service On-Dock Intermodal Container Transfer Rail Yard, June 1986.

AQMP COMMITMENT SCHEDULE

MEASURE : 3.b. DIVERTING PORT-RELATED TRUCK

TRAFFIC TO RAIL

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|--|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### | ### | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Ports of L.A. and Long Beach and railroads to develop plans for the development of on-dock or near dock intermodal container transfer facilities between 1988-1990.
- o Initiate construction of new on-dock yards between 1989-1992.
- o Continue to implement new on-dock or near dock yards between 1993-2010.

4. TRAFFIC FLOW IMPROVEMENTS

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SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Trucks, Heavy Duty Trucks

CONTROL METHODS: Tier I

- o Caltrans, SCAG, and Transportation Commissions program and implement "Constrained" RMP ramp meters and HOV by-pass lanes between 1989 and 1993.
- o Local government implement ATSAC systems and similar interconnected signal control systems or appropriate non-interconnected synchronization methods on 2000 signalized intersections between 1989-1993 and 8000 by 2010.
- o Local government improve channeling of 125 intersections between 1989-1993 and 500 by 2010.

Tier II

Caltrans, SCAG and Transportation Commissions obtain funding, and program and implement "Unconstrained" RMP ramp meters and HOV by pass lanes.

IMPLEMENTING AGENCIES:

CALTRANS, Local governments, Transportation Commissions, SCAG

IMPLEMENTATION ASSUMPTIONS:

Additional 600 freeway ramps metered, 8,000 signals synchronized, and 500 intersections improved.

Tier I

25% of the emission reductions will occur by January 1, 1994.

Tier II

75% of the emission reduction will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

19.74 tons/day CO reduction by 1994.

Tier II

59.22 tons/day CO reduction by 2010.

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DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Poor traffic flow on freeways and arterials significantly reduce travel speeds, increase the frequency of stops, add to vehicular delay, and contribute to increased emissions. On freeways, poor traffic flow due to excessive demand can actually produce a reduction in effective roadway capacity and a lower rate of vehicle throughput. On conventional arterials, improperly timed signals and inadequate intersection channelization produce thousands of hours of added delay. Increased ramp metering restricting freeway access to optimize flow characteristics and throughput can greatly reduce total delay on freeways without adding capacity. Similarly, intersection channelization improvements can reduce arterial delay by increasing roadway capacity through more effective utilization of roadway widths. Hi-tech computerized and interconnected signal systems (ATSAC) can further reduce the amount of recurrent vehicular delay, and serve as well, by permitting remote control of signal timings, as an effective traffic management tool in combating congestion resulting from non-recurrent congestion.

Regulatory History

An extensive program of ramp metering was included in the 1979 AQMP as "currently planned" improvements, and was thus included in the so-called "Baseline." This program included the metering of 1150 freeway ramps by the year 1987. As of January, 1988, installation of meters was complete on only 749 ramps. The 1979 AQMP and the 1982 Revision contained TCM K2 Traffic Signal Synchronization, calling for integrated systems of 5,900 regulated signals over 1,930 miles by the year 1987. Implementation of K2 has progressed as scheduled.

No AQMP provisions have previously specified intersection channelization as an air quality beneficial improvement.

CONTROL METHODS

Caltrans, SCAG, and Transportation Commissions should program and implement the AQMP Tier I and RMP ramp meters and HOV by-pass lanes between 1989 and 1993. RMP projects under the constrained funding scenario are those which have currently identified funding sources and mechanisms. Those projects for which new funding sources and mechanism have to be identified in the future, but are needed to meet the RMP goals, are in the unconstrained funding scenario. The programming phase would include the establishment of

ramp metering programming targets as a part of the consistency/conformity review process. Of the total 1410 freeway ramps in the SCAB, 749 are currently metered. The metering of 600 additional ramps through the implementation of the AQMP Tier I and RMP Tier I targets will bring the total to 1349.

Local government should implement ATSAC systems and similar interconnected signal control systems or appropriate non-interconnected synchronization methods on 2000 signalized intersections between 1989 and 1993, and to 8000 by 2010. Full implementation of ATSAC is scheduled within the City of Los Angeles. The City of Anaheim is proceeding with an identical system.

Local government should improve channelization at 125 intersections between 1989 and 1993, and to 500 intersections by 2010. As a part of SCAG's Overall Work Program, an inventory of intersection locations which would be candidates for improved channelization should be identified and jurisdictions encouraged to implement the improvements.

The implementing agencies would be required to generate ramp meter, HOV by-pass lane, unsynchronized and synchronized intersections and miles, and intersections with improved channelization baseline data. Upon implementation, the agency would be required to monitor the progress and effectiveness of the improvements, and report the results and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

The principal obstacles are the absence of adequate funding and the difficulties of inter-jurisdictional coordination.

OTHER IMPACTS

Possible traffic redistribution and some traffic impacts on city streets may result from implementation of this measure. Improved traffic flow and energy savings should also result.

LEGISLATIVE/RESEARCH NEEDS

None.

IMPLEMENTATION ASSUMPTIONS

This measure assumes that 600 additional freeway ramps will be constructed, ATSAC systems and similar signal control systems will be implemented at 8000 intersections (ATSAC-4700 signals, other synchronization - 3300 signals), and channelization improved at 500 intersections.

Tier I

This measure assumes that 25% of the emission reductions will occur by January 1, 1994 through the construction of 150 freeway ramps, the implementation of 2000 synchronized intersections, and channelization at

125 intersections.

Tier II

This measure assumes that 75% of the emission reductions will occur between 1994 and 2010 through the additional construction of 450 freeway ramps, the implementation of 6000 synchronized intersections, and channelization at 375 intersections.

INDICATORS

Tier I

Daily vehicle hours of delay would be reduced by a range of 187,500 to 250,000 hours.

Tier II

Daily vehicle hours of delay would be reduced by a range of 562,500 to 750,000 hours.

PRIMARY BENEFIT

Tier I

CO will be reduced by 19.74 tons/day.

Tier II

CO will be reduced by 59.22 tons/day.

REFERENCES

Automated Traffic Surveillance And Control Evaluation Study, Department of Transportation, City of Los Angeles, July, 1987; The Effects of Ramp Metering on City Streets, California Department of Transportation, February, 1979; Inventory of Controlled Ramps, California Department of Transportation, January, 1988; Regional Transportation Improvement Program Emissions Analysis Methodology, Southern California Association of Governments, April, 1979.

AQMP COMMITMENT SCHEDULE

MEASURE : 4. TRAFFIC FLOW IMPROVEMENTS

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|-------------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | ### | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | ### ### ### | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- Caltrans, SCAG, Commissions implement ramp meters and HOV by-pass lanes in the Constrained HOV element of the adopted Regional Mobility Plan. (This project list is based on funding available during the next 20 years.)
- Local government implement Automated Traffic Surveillance and Control (ATSAC) on 1000 intersections (1989-1993).
- Local government implement projects to improve intersection channelization.

5. NONRECURRENT CONGESTION

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SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Trucks, Heavy Duty Trucks

CONTROL METHODS: Tier I

Design and program improvements by 1989-1993 to:

- o Expand and improve incident response programs
- o Improve freeway management and enforcement practices
- o Increase enforcement of codes governing loads and vehicle safety
- o Develop and secure funding for OWP Elements

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

CHP, Caltrans, local jurisdictions, SCAG

IMPLEMENTATION
ASSUMPTIONS:

Improved response to approximately 200 (67%) of major incidents would reduce 750,000 vehicle hours of delay annually.

Tier I

25% of the emission reductions will occur by January 1, 1994.

Tier II

75% of the emission reductions will occur by January 1, 1994.

PRIMARY BENEFIT:

Tier I

4.72 Tons/Day CO reduction by 1994.

Tier II

14.18 Tons/Day CO reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Non-recurrent congestion is caused by major and minor traffic accidents, law enforcement activities, scheduled events drawing large audiences, improperly adjusted sprinklers, abandoned automobiles, and so on. Any congestion caused by events of any nature which do not recur on a regular basis, as does daily commuter traffic, is said to be non-recurring. Non-recurrent congestion is currently estimated to account for approximately one half of the total congestion in this region. Limited programs have long been in place to help reduce the impacts of very major incidents. Only fairly recently have the efforts of freeway management been more programmatically directed at the myriad lesser non-recurring events which collectively contribute significantly to the sum of non-recurring congestion. A major effort to combat the effects of non-recurrent congestion must be seen as a precondition for other Transportation Control Measures, the effectiveness of which will otherwise be considerably lessened.

I. Major Incident Response

Major incidents, causing closures of multiple freeway lanes for from one to several hours, are the most extreme cause of non-recurrent congestion. Major portions of the freeway system can be severely impacted by a single such event. Major incidents occur on an average of more than one per work day.

In order to deal with such occurrences, Caltrans maintains a major Incident Management Program. In conjunction with other responsible entities, such as the CHP, local fire departments, ambulance services, and so on, these teams help provide a coordinated on-the-scene response to major incidents. The Caltrans teams provide traffic management (including traffic re-routing), emergency maintenance, clean-up, and assistance and coordination with other services.

These teams are a very important part of the effort to combat non-recurrent congestion. Due to limited staffing, which is partly provided on a volunteer basis from other Caltrans units, and equipment, however, these teams are unable to respond to every situation for which their services would be appropriate. For the same reasons, response times for the team are sometimes not as fast as would be desirable. Because the team is partly staffed by volunteers, because members of the team must perform other duties while not actually responding to incidents, and because of the rather modest levels of permanent staffing, the geographic dispersal of team units to permit faster response times has not been practicable. Despite these limitations, the operations of the Caltrans District 7 Emergency Response Team saved motorists about 190,000 vehicle hours of delay in 1987.

Increased effectiveness of the incident response program can be anticipated in the near future as a function of programmed improvements in staffing and equipment levels as well as operational adjustments which will permit improvements in deployment practices. This result will be reinforced as a function of bringing Caltrans District 12 into full operational status with its own incident management team for Orange County.

These changes, coupled with improved technological means of incident detection and management (including changeable message signs, closed circuit cameras, detector loops in pavement wired to ramp meters and traffic operations centers), should result in a significant further reduction in non-recurrent delay. Although precise estimates are impossible, it is not unreasonable to anticipate somewhat better than a doubling of delay reductions as a result of bolstering and refining the incident management program, bringing the total savings in delay to about 400,000 vehicle hours.

Two other aspects of non-recurrent congestion organizationally associated with the incident management program are the operational response to planned events, such as football games and rock concerts, and provisions for managing (including scheduling) planned lane closures for maintenance purposes.

Recommendations have been included in the Auto Use Restrictions measures for improving the effectiveness of managing scheduled events.

Planned lane closures for maintenance have traditionally been scheduled during the off-peak traffic period. One of the current difficulties in scheduling lane closures for maintenance is that the period between the expiration of the morning commute and the commencement of afternoon congestion has shrunk considerably. In some corridors, there simply is no "off-peak" period. In short, a "window of opportunity" for essential maintenance virtually no longer exists during daylight hours. Even daytime closures during the weekend often result in considerable congestion.

The obvious solution to this problem is to schedule all maintenance work resulting in lane closures or traffic disruption at night. Such an approach would be quite costly, although probably justified on a cost-benefit basis when the total cost of motorist delay is considered. This approach might not yet be appropriate on all freeways. A differential application of a night time maintenance requirement could probably be established based on prevailing traffic volumes on the different facilities.

II. Truck-Involved Incident Prevention

The Caltrans Incident Management Program attempts to reduce the total vehicular delay resulting from incidents which have already occurred. Except as it attempts to minimize the likelihood of secondary accidents, it is not preventive. A significant component, however, of the overall program to combat non-recurrent delay must be prevention. The most obvious target of incident prevention is heavy-duty trucks. Approximately 70

percent of all major incidents (as determined by Incident Management Team responses), which exceed 300 per year, involve trucks, with each such incident accounting for 20,000 to 30,000 vehicle hours of delay. The delay associated with some truck involved incidents, especially if hazardous materials are involved, can be very much greater.

Most of the current work involving trucks (such as the L.A. City Truck Delivery Demonstration Program, the draft Strategies to Reduce Travel by Large Trucks on Orange County Freeways, and the AB 1257 Urban Gridlock Study) primarily address truck routing and scheduling and associated impacts. Except as the elimination of truck traffic from certain routes and/or for certain periods reduces the opportunity for truck-involved incidents, these programs primarily deal with truck traffic as a component of recurrent congestion. Although these are important effects, it is also vital to better address the issue of truck safety generally, regardless of the time or location of the truck traffic.

A number of preliminary efforts are beginning to address this aspect of non-recurrent congestion. These include a federal program to create a single nationwide license of operators of heavy-duty vehicles, considerations of stricter enforcement by the CHP of existing codes governing unsafe loads and truck lane restrictions, additional truck safety inspection points, and recommended studies into the causes of truck accidents.

SCAG, Caltrans, SCAQMD, and other agencies and organizations should work cooperatively to refine and implement a program of truck safety. Each major truck-involved incident prevented equals a savings of 20,000 to 30,000 vehicle hours of delay, or more.

Although the effectiveness of any or all potential actions in preventing major truck-involved incidents (including spilled loads) remains highly speculative, a reduction of 5 to 10 incidents a year, as a result simply of stricter CHP enforcement practices, would not seem unreasonable as a minimum outcome. This would save between 100,000 and 300,000 vehicle hours of delay.

III. General Non-recurrent Congestion

A large amount of non-recurrent congestion results from relatively minor causes, as opposed to major incidents. Minor traffic accidents, CHP enforcement activities, abandoned, stalled, or illegally parked vehicles, even improperly maintained landscaping sprinklers can contribute to causing non-recurrent traffic congestion. Visual distractions to drivers may be as significant in causing congestion as minor physical obstructions. No competent estimates exist as to the amount of total vehicle delay resulting from this category of relatively minor causes, other than the general acknowledgment that, cumulatively, these causes contribute significantly to the overall congestion picture. This is especially true when freeways are flowing well, but at or near capacity. Under such circumstances of critical flow, even minor factors can cause freeway operations to break down, resulting in rather severe congestion.

With modest exceptions, no specific programs presently exist for addressing this category of non-recurrent congestion. The exceptions include a current Congestion Task Force being conducted by the California Highway Patrol. This Task Force has led to the initial identification of certain implementable recommendations which are designed to minimize the traffic delay impacts of CHP enforcement and traffic management practices, and to prevent accidents through driver re-testing. Other exceptions include recommendations regarding improved highway advisory radio (and other types of advisory media), the "Smart Corridor" concept, improved techniques for managing tow truck services and dispatching, and technological improvements to Caltrans Traffic Operations Centers. An additional tactic of expanding the vehicle inspection and maintenance program to include basic safety and operational checks could provide substantial savings in both time and safety.

Without specific study, no estimates can be made regarding the possible effectiveness of these efforts other than to assert that, given implementation, all should produce positive results.

All of the congestion relief programs would be required to generate base emissions data. Upon implementation, the implementing agency would be required to monitor the progress and effectiveness of the effort, and report the results and baseline data annually to SCAG for incorporation into the RFP Report.

Regulatory History

The 1979 AQMP contained H118 Reduce Non-Recurrent Congestion. The measure called for automation traffic management procedures by expanding electronic surveillance and changeable message signing; and by implementing closed circuit television and highway advisory radio at designated locations along the network, permitting improved detection and response.

The 1982 Plan Revision contained a similar measure, K4 Reduce Non-recurrent Congestion, and K14 Eliminate Lane Closures -- Orange County. This strategy outlined a program to eliminate roadway blockages during peak hours.

CONTROL METHODS

A cooperative program to combat non-recurrent congestion should be designed, mounted and programmed by Caltrans and CHP by 1989 to 1993. The following, control methods constitute a menu of options for a program to combat non-recurrent congestion. Those included in the estimation of benefits for this transportation control measure are denoted with an asterisk.

I. Major Incident Response

- o Expand Caltrans incident management program (equipment and personnel);
- o Provide broader geographic deployment of incident management

personnel;

- o Continue programming, purchasing, and installation of changeable message signs and closed circuit cameras at appropriate freeway locations;
- o Create greater awareness among non-state agencies and private firms involved in major incident response of the need to develop training and procedures emphasizing response practices that minimize additional traffic interference.
- o . Improve liaison and training with local agencies and private firms involved in major incident response;

SCAG, SCAQMD, Caltrans, LACTC, and other agencies should work cooperatively to develop and support specific programs for the implementation of these general actions.

IA. Planned Lane Closures

- o Implement by a program of increased night time maintenance to reduce the impacts of planned freeway lane closures.

II. Truck-Involved Incidents

- o Implement stricter enforcement of regulations on spilled load cleanup costs;
- o Implement stricter enforcement of codes governing unsafe loads;
- o Refine truck speed regulations and increase enforcement of truck speeds;
- o Implement truck prohibitions during episodes of high winds;
- o Strengthen licensing requirements for drivers of commercial vehicles;
- o Implement increased enforcement of commercial vehicle lane violations;
- o Implement increased enforcement of truck equipment violations;
- o Improve heavy-duty vehicle design standards;
- o Increase CHP manpower;

III. General Non-recurrent Congestion

- o Encourage and support continued technological upgrades of the District 7 Traffic Operations Center to provide enhanced integration of multi-agency traffic surveillance, motorist

information, and traffic management; and encourage and support the establishment of comparable centers in Districts 8 and 12;

- o Implement refined law enforcement techniques which concentrate on congestion management and mitigation;
- o Demonstrate and evaluate the potential benefits to be achieved, on a corridor basis, from the implementation of technological improvements to facilitate the operational integration of freeway and city street systems, such as the Smart Corridor Demonstration program;
- o Improve freeway tow vehicle service operations;
- o Remove disabled or abandoned vehicles from freeway shoulders whenever a visual traffic hazard is constituted;
- o Increase use by CHP of DL 412 Form, "Request for Re-examination of Driver."
- o Improve freeway truck management (AB 1257 study results, LA City truck delivery demonstration project, Rte 101 voluntary truck avoidance program, SCAG Truck Task Force recommendations, AQMD regulatory authority);
- o Implement improved and expanded highway advisory information methods.

IMPLEMENTATION ISSUES

Many of the components of this program can be implemented without additional funding. The raising of revenues for other components may be difficult, and the success of a number of legislative initiatives is uncertain. Further obstacles involve the need to develop appropriate policy positions of state agencies; finding the means to improve coordination among agencies and involved private sector entities; resolving legal and administrative difficulties surrounding tow truck service; and the vagaries of succeeding with required legislative initiatives.

LEGISLATIVE/RESEARCH NEEDS

- o Continued research on truck accident characteristics and causes;
- o Continued research on effective and equitable means to reduce truck impacts through time of day and route restrictions and improved delivery schedules;
- o Continued research on truck design improvements to reduce the number and severity of accidents;
- o Legislative action to revise specific traffic regulations;
- o Legislative action to fund CHP and Caltrans manpower increases to deal

with non-recurrent congestion;

- o SCAG, Caltrans, SCAQMD, and other agencies sponsor a study on the feasibility of specifying traffic volume thresholds for mandatory night time maintenance; followed by appropriate legislative action.
- o Sponsor studies to evaluate the causes (including driver error, roadway geometrics, vehicle design) of large truck accidents, and to identify remedial actions to reduce the number of such accidents;
- o Support studies and regulations (through legislative action or otherwise) into the feasibility of requiring diesel tank relocation and/or anti-rupture protections to prevent diesel spills from truck-involved accidents and thereby to reduce the duration of congestion resulting from truck-involved incidents;
- o Investigate the feasibility and potential benefits of establishing a system of truck prohibitions during severe wind episodes in high wind areas;
- o Investigate, based on results of truck-involved accident studies, the feasibility and potential benefits of establishing a differential speed limit for heavy duty trucks on urban freeways;
- o Investigate the feasibility and potential benefits of utilizing unmarked CHP vehicles for traffic enforcement targeted especially on heavy duty trucks;
- o Legislative action to establish more stringent licensing requirements for drivers of commercial vehicles (federal program);
- o Support increased enforcement of truck equipment violations;
- o Legislative/administrative action to increase CHP manpower and budgets;
- o Legislative action to expand the vehicle inspection and maintenance program to include basic safety and operational checks;
- o Support actions and programs currently underway by Caltrans and the California Highway Patrol to improve tow vehicle response times through improved dispatching mechanisms, direct state operation of tow vehicles, the utilization of private roving freeway tow services, or by other appropriate means.

OTHER IMPACTS

Implementation of this program, besides reducing the amount of non-recurrent congestion, should reduce the number of accidents; improve response times for injury accidents; improve traffic flow during normal congestion; possibly add costs and noise impacts associated with goods delivery.

IMPLEMENTATION ASSUMPTIONS

It is estimated that an improved program would reduce annual delay by about 750,000 vehicle hours based on a response to about 200 (67%) incidents. The delay reductions indicated here are quite conservative, and based only on assumed implementation of a small number of methods. The effectiveness of this measure will depend upon the extent of implementation as well as on other factors, such as the success of various research efforts. A vigorous and more comprehensive implementation program, contingent upon successful legislative action, could be expected to achieve these benefits several times over.

Tier I

This measure assumes 25% of the emission reductions will occur by January 1, 1994 through the design and implementation of the non-recurrent congestion relief control methods.

Tier II

This measure assumes 75% of the emission reductions will occur between 1994-2010.

INDICATORS

About 90 percent of these reductions come from Light Duty Autos and Light and Medium Duty Trucks and about 10 percent from Heavy Duty Trucks.

Tier I

Vehicle hours of delay would be reduced by 187,500 hours.

Tier II

Vehicle hours of delay would be reduced by 562,500 hours.

PRIMARY BENEFIT

Tier I

CO will be reduced by 4.72 tons/day.

Tier II






CO will be reduced by 14.18 tons/day.

REFERENCES

California Department of Transportation Quarterly and Annual Reports on Incident Management Programs; Captain L. Denno, California Highway Patrol, Border Division; Caltrans District 7 Incident Management Staff.

MEASURE : 5. NONCURRENT CONGESTION

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|--|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

Design and program improvements from 1989-93.

- o Expand and improve incident response programs: CALTRANS
- o Improve freeway management and enforcement practices: CALTRANS
- o Increase enforcement of codes governing loads and vehicle Safety: CHP
- o Develop and secure funding for OWP Elements: SCAG

6. AIRCRAFT AND GROUND SERVICE VEHICLES

SUMMARY

SOURCE CATEGORY: Aircraft (air carrier, air cargo, and commuter)

CONTROL METHODS: Tier I

Adoption by 1991 of a Local Government Airport Operators rule or adoption of an SCAQMD Indirect Source rule for airports by 1992 to require modification of aircraft operations and procedures and use of alternative fuels and technologies for ground service vehicles.

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

Local Government, Airport Operators, SCAQMD

IMPLEMENTATION
ASSUMPTIONS:

10% reduction in aircraft and ground service vehicle emissions as a result of a reduction in fuel use and from the use of alternative fuels.

Tier II

10% of the emission reductions will occur by January 1, 1994.

Tier II

90% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

0.26 Tons/Day NOX Reduction by 1994.

Tier II

2.35 Tons/Day NOx Reduction by 2010.

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Indirect source controls can be applied to facilities which may not directly produce emissions themselves, but induce emissions through activities which attract mobile sources. In the case of airports, the mobile sources are airplanes, ground support vehicles which service the airplanes, and automobiles which carry air passengers to and from the airport. An indirect source regulation could reduce emissions from aircraft and ground support vehicles by prompting changes in mobile source operations and procedures, fuel use, and facility design.

Aviation-related emission control measures have been included in both the 1979 and 1982 AQMPs. However, the implementation of these measures has met with little success. With the passage of Senate Bill 151 in 1987, the SCAQMD now has the authority to implement indirect source controls, which can include control of aviation-related emissions. This regulation would provide both the overall incentive for aviation-related control measures to be implemented, and the flexibility to allow airport operators to select for implementation those measures which work most effectively for their airports.

Regulatory History

Measures for controlling emissions from aircraft were included in both the 1979 and 1982 AQMPs. The 1979 Plan included H2 Jet Aircraft Ground Taxi Improvements, calling for increased engine speed during idle and decreased engine use during taxiing operation by using fewer engines to taxi.

H6 Piston Engine Aircraft Emission Controls called for "enleanment" of general aviation fuels through modification of engines including improvements in cooling fins, refinements to fuel management systems, addition of acceleration pumps on carbureted engines, increased application of fuel injection and improvement to the fuel injection systems, improvements in the valve and/or ignition timing methods, balancing of the induction system, and improved fuel vaporization.

H16 Proposed 1978 Emission Standards - Jet Aircraft Engines called for the achievement by promulgated standards for jet aircraft engine emissions by retrofitting old engines and developing controls on new engines.

H25 Reduce Jet Aircraft Queuing Delays called for the elimination of aircraft delays and excessive idle/taxi times by controlling the landing and departure times, utilizing "gate hold" procedures, and increasing the capacity and improving the efficiency of airport runway and terminal facilities. The aim of this measure is to reduce the average taxi-idle period as well as ease the congestion on runways and aircraft boarding areas.

The 1982 Plan Revision included L1 Tow Aircraft. This measure would replace the current practice of engine propelled taxiing of air carrier aircraft with towing by a special purpose vehicle.

L3 Jet Aircraft Ground Taxi Improvements would reduce jet aircraft queuing by refining the procedures used to control departure times.

L5 Centralized Ground Power Systems called for the installation of a centralized system for supplying electrical and pneumatic power to aircraft while at the terminal gates, eliminating the usage of auxiliary power units and ground power units mounted on service vehicles.

L9 Reduce the Number of Aircraft Engines During Idle and Taxi Operations would reduce the number of aircraft engines operating during idle and taxi modes.

M6 Emission Controls for Non-Carrier Aircraft would reduce emissions from general aviation aircraft by modifying the mixture ratio of engines (high fuel:air ratio) in order to maximize take-off horsepower.

Because the implementation of these measures was voluntary in nature, it did not occur except as a result of fortuitous circumstances, such as higher fuel prices and the air traffic controllers' strike. For this reason, several of the aviation measures were recommended for deletion from the AQMP in the Reasonable Further Progress (RFP) report of 1984.

Although the Clean Air Act Amendments of 1977 limited federal authority over indirect sources to the review of federally assisted projects, they left to the discretion of states the inclusion of indirect source regulations in their state implementation plans. In 1985, at least nine states, not including California, had some type of indirect source regulation in their plans.

Indirect source regulation was included as a high priority further study measure in both the 1979 AQMP and its 1982 revision. In the fall of 1987, the California State Legislature gave explicit authority to the SCAQMD, through the passage of SB 151, to implement indirect source regulations. The District has taken a first step to exercise that authority by passing a rule in December, 1987 (Regulation XV) which requires companies with over 500 employees (eventually 100) to prepare and implement trip reduction plans for their employees.

CONTROL METHODS

Local government would adopt an ordinance by 1991 to regulate aircraft and ground service vehicles at airports in the region. The ordinance would be implemented by requiring permits for new and existing air carrier airport facilities. Permits would allow air passenger growth up to levels corresponding to the capacity of existing facilities, beyond which new permits would be required. To receive a permit, an airport operator would need to prepare a plan that would identify and describe control measures and implementation responsibilities for reducing emissions from aircraft and ground support vehicles at his airport. The plan's overall objective would be to meet emission reduction targets set by the local government in cooperation with the District, expressed in both allowable emissions per average aircraft operation, and allowable emissions per million air

passengers served (MAP). An emissions analysis would accompany the plan, demonstrating how the plan elements are adequate to attain the emission reductions targets.

Once the airport operator develops a plan which he feels meets emission reduction objectives with measures appropriate to his airport, he would submit it to the Local government for approval. It would be the District's responsibility to determine the adequacy of the plan in meeting set emission reduction targets. Plans deemed inadequate could be sent back to the operator for revision. Variances from the emission targets could be granted if the local government is satisfied that all best available control technology (BACT) and best available control measures (BACM) would be implemented through the plan. The definition of what is BACT and BACM for any particular airport would be subject to negotiations between the District and the airport operator. Examples of potential airport-related BACT and BACM have been previously proposed in the 1982 AQMP and the 1988 Palmdale Airport Air Quality Study. They include, but are not limited to, such measures as:

- o Centralized Fueling Systems
- o Taxiway Improvements/High Speed Taxiways
- o Reduce Number of Aircraft Engines During Taxi and Idle
- o Control Departure Times
- o Redesign Terminal Facilities
- o Centralized Ground Power Systems/Reduce Auxiliary power units
- o Tow Departing Aircraft to Intermediate Staging Areas
- o Alternative Fuels (or Electrification) for Service Vehicles
- o Promote a Cleaner Aircraft Fleet Mix

The ordinance would require that baseline aircraft and ground service vehicle emissions data be generated. Upon implementation the jurisdiction would be required to monitor the progress and effectiveness of the ordinance, and report results and baseline data annually to SCAG for incorporation into the RFP Report. Failure to meet emission reduction targets would not invoke penalties so long as approved plan elements were implemented in good faith.

In the absence of action by local governments or local Airport Operators, the SCAQMD would adopt an Indirect Source Regulation by 1992 to regulate aircraft and ground service vehicles. The District's Indirect Source Regulation would be identical to the ordinance proposed for local government adoption and local aircraft operator's implementation except the regulation would be administered by the SCAQMD.

IMPLEMENTATION ISSUES

Several promising measures which could be included in indirect source plans involve innovative but relatively untested technology, such as towing aircraft and using alternative fuels for service vehicles. The feasibility and emission reduction potential of these measures needs to be established through case studies/demonstration projects for which funding support is uncertain.

CONTROL COST

Costs will vary for each airport, depending upon the specific package of measures selected by each airport to attain emission reduction targets. Costs can range from several thousand dollars for runway improvements such as new exitways, to several million dollars for redesigned terminal facilities. Some measures, such as reducing the number of engines during taxiing and idling, would result in cost savings through reductions in fuel consumption.

OTHER IMPACTS

Some of the potential measures in required plans could result in increased delays to air travelers, such as towing aircraft and controlling departure times. However, measures for developing taxiway improvements and redesigning terminal facilities would tend to reduce delays. Promoting a cleaner aircraft fleet mix would also reduce noise impact since cleaner aircraft are also generally quieter. This regulation would increase the administrative responsibilities of airport operators.

LEGISLATIVE/RESEARCH NEEDS

Demonstration projects would be needed on an ongoing basis to explore the feasibility of aviation emission control measures. Existing measures, such as towing aircraft, have longstanding questions as to their feasibility and potential impacts which need to be explored in demonstration projects. The promise of new technological breakthroughs such as in short take-off and landing (STOL) aircraft, unducted fan engine technology, and use of alternative fuels in aviation, all warrant close observation and study for potential air quality benefits in future applications.

IMPLEMENTATION ASSUMPTIONS

A 10% reduction in aircraft and ground service vehicles emissions is assumed for this measure through an indirect source regulation and modifications to airport operations. The emissions of ground service vehicles are 1% of aircraft emissions.

Tier I

This measure assumes 10% of the emission reductions will occur by January 1, 1994 through the adoption by January 1, 1991 of a local airport operators rule.

Tier II

This measure assumes 90% of the emission reductions will occur between 1994 and 2010.

INDICATORS

Tier I and II

Based on implementation assumption, fuel use for aircraft and ground service vehicles will be reduced and alternative fuels will be utilized.

PRIMARY BENEFIT

Tier I

NOx will be reduced by 0.26 tons/day.

Tier II

NOx will be reduced by 2.35 tons/day.

REFERENCES





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AQMP COMMITMENT SCHEDULE

MEASURE : 5. AIRCRAFT AND GROUND SERVICE VEHICLES

| COMMITMENT | | | | | |
|---------------------|--|--|--------------------|---------|----------|
| ACTION | | EXAMPLES | SCHEDULE TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Through the adoption a local Airport Operators rule by January 1, 1991, require modification of aircraft operations and procedures, and use of alternative fuels and technologies for ground service vehicles.
- o SCAQMD to adopt an Airport Indirect Source rule by January 1, 1992, where local ordinances have not been adopted or have not been effective.

7. CENTRALIZED GROUND POWER SYSTEMS

SUMMARY

SOURCE CATEGORY: Aircraft

CONTROL METHODS: Adoption by January 1, 1991 of a local government Airport Operators rule, or adoption of an SCAQMD indirect source rule for airports by January 1, 1992, to reduce usage of auxiliary power units while air carrier aircraft are parked at terminal gates, through provision and use of centralized power and air conditioning systems.

IMPLEMENTING
AGENCIES:

Airport Operators, Airlines, SCAQMD

IMPLEMENTATION
ASSUMPTIONS:

Tier I

75% of the emission reductions will occur by January 1, 1994.

Tier II

25% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

0.44 Tons/Day NOx Reduction by 1994.

Tier II

0.15 Tons/Day NOx Reduction between 1994 and 2010.

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Indirect source controls can be applied to facilities which may not directly produce emissions themselves, but induce emissions through activities which attract mobile sources to them. In the case of airports, this includes aircraft which produce emissions during various modes of operation (landing, takeoff, taxi, and idle). This measure is aimed at reducing emissions produced in the idle mode by aircraft while parked at terminal gates.

Aircraft need a power source while parked at terminal gates, supplying both electrical and pneumatic power, to operate the avionics and keep the passenger compartment cool. This power source is typically supplied through either an on-board jet engine called an auxiliary power unit (APU) or a mobile ground power unit (GPU) mounted on a service vehicle. Each of these power units creates emissions through the burning of either jet or diesel fuel.

Several airports around the country, including LAX, have equipped their gates with centralized ground power systems. Fewer emissions are created with these systems, as opposed to APU or GPU usage, since they draw power from the main electrical grid. However, it has been observed at LAX that airlines have been reluctant to utilize the centralized power if the system isn't also equipped with a compressor to supply pre-conditioned air. The power supplied to the avionics systems is not able to run the on-board air conditioning systems since different frequencies are required (400 hertz vs 560 hertz for air conditioning). Consequently, aircraft have to run their APU's or GPU's to cool their aircraft if centralized power is provided without pre-conditioned air, defeating the purpose of the centralized power. Of the 115 gates at LAX with centralized power, only 30 also supply pre-conditioned air.

Regulatory History

A measure called Centralized Ground Power Systems was included in the 1982 AQMP, for implementation by 1985. Because of the limited monitored compliance (only LAX partially implemented the measure) the measure was recommended for potential elimination from the 1988 AQMP by the 1984 Reasonable Further Progress Report (RFP).

Although the Clean Air Act Amendments of 1977 limited federal authority over indirect sources to the review of federally assisted projects, it left to the discretion of the state the inclusion of indirect source regulations in their state implementation plans. In 1985, at least nine states, not including California, had some type of indirect source regulation in their plans.

Indirect source regulation was included as a high priority further study measure in both the 1979 AQMP and its 1982 revision. In the fall of 1987, the California State Legislature gave explicit authority to the SCAQMD, through the passage of SB 151, to implement indirect source regulations. The District took a first step to exercise that authority by passing a rule in December, 1987 (Regulation XV) which requires companies with over 500 employees (eventually 100) to prepare and implement trip reduction plans for their employees.

CONTROL METHODS

Local governments would adopt an airport operators ordinance by January 1, 1991 to require the phased installation of centralized ground power, with pre-conditioned air, at all terminal gates at the five air carrier airports in the region. Also, gates with just centralized power would be equipped

with air conditioning. It is recommended that 75% compliance be attained by 1994, and 100% by the year 2000. Major new terminal construction currently in the planning stages at John Wayne, Burbank and Ontario airports should provide timely opportunities for the installation of centralized power and air conditioning systems within the next five years. It is especially timely since air conditioning systems are space intensive and can be much more efficiently provided, with centralized compressors, when designed into new terminal gate construction as opposed to retrofitting existing structures. It would be the responsibility of the airport operators to enforce use of the systems when they are made available, and prevent APU and GPU usage.

In the absence of action by local governments or local airport operators, the SCAQMD would adopt an Indirect Source Regulation by 1992 to require the installation of centralized power with pre-conditioned air, at all terminal gates at the five air carrier airports in the region. The District's Indirect Source Regulation would be identical to the ordinance proposed for local government adoption and local airport operators' implementation, except the regulation would be administered by the SCAQMD.

The ordinance or regulation would require that baseline power emissions data be generated. Upon implementation, the jurisdiction would be required to monitor the progress and effectiveness of the ordinance, and report results and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

This measure has no barriers to implementation since it has been successfully employed at LAX and other air carrier airports around the country. It would require the compliance of the airlines to utilize the systems when they are made available. Airline compliance could be secured through either informal agreements with the airport operators, or through new formalized procedures written into airline lease agreements with the operators. The expense of this measure could be substantially defrayed by federal funding participation, since it is an eligible item under the federal Airport Improvement Program (AIP).

CONTROL COST

There are a total of 189 terminal gates currently existing or in the planning stages at air carrier airports in the region. Of these, 115 (at LAX) currently have centralized power, and 30 (at LAX) have both centralized power and air conditioning. Assuming a cost of \$100,000 to install each gate with centralized power yields a total of \$7.4 million for complete centralized power installation. Assuming a total of \$500,000 to install each gate with air conditioning yields a total of \$79.5 million for complete centralized air conditioning installation. The total cost of this measure would therefore total \$65.2 million by 1994 (75% compliance) and \$86.9 by the year 2000 (100% compliance). This cost could be greater if substantial retrofitting of existing terminal gate facilities is required as opposed to designing into new facilities.

OTHER IMPACTS

Implementation of this measure would result in fuel savings for airlines. It would also result in less noise and fewer diesel-related odors due to the reduction of APU and GPU usage at the terminal gates. It could potentially cause minor delays due to the added time required for aircraft to hook up to the systems.

LEGISLATIVE/RESEARCH NEEDS

Surveys of each air carrier airport in the region are needed to establish a baseline of centralized power system/air conditioning provision and usage. This information would allow for more precise estimates of costs and emission reduction impacts associated with the measure, as well as exact implementation requirements. Also, research should be conducted to explore possibilities for transforming power frequencies through the centralized systems to frequencies that are compatible with running on-board air conditioning systems, to alleviate the expense of providing centralized air conditioning systems.

IMPLEMENTATION ASSUMPTIONS

Tier I

This measure assumes that 75% of the emission reductions will occur by January 1, 1994, through the adoption by January 1, 1991, of a local government airport operators rule.

Tier II

This measure assumes that 25% of the emission reductions will occur between 1994 and 2010.

INDICATORS

Tier I and II

Based on implementation assumptions, emissions from auxiliary power units will be reduced.

PRIMARY BENEFIT

Tier I






0.44 Tons/Day NOx will be reduced by 1994.

Tier II

0.15 Tons/Day NOx will be reduced between 1994 and 2010.

MEASURE : 7. CENTRALIZED GROUND POWER SYSTEMS

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|--|--|----------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHMA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Through adoption of a local Airport Operators rule by January 1, 1991, require use of centralized power and air conditioning systems.
- o SCAQMD to adopt an Indirect Source rule by January 1, 1992, where local ordinances have not been adopted or have not been effective.

8. AIRPORT GROUND ACCESS

SUMMARY

SOURCE CATEGORIES: Light Duty Auto, Light and Medium Duty Trucks

CONTROL METHODS: Tier I

Adoption by January 1, 1990 of a local government Airport Operators rule or adoption by January 1, 1991 of an SCAQMD indirect source regulation that would reduce the number of air passenger auto trips generated by airports. It would also reduce congestion in the airport ground access system.

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

Local Governments, Airport Operators, SCAQMD

IMPLEMENTATION
ASSUMPTIONS:

346,321 vehicle miles traveled (VMT) and work trips will be reduced assuming 118 million air passengers (MAP), 750 airport employees per MAP, average commute distance of 19.4 miles and average vehicle ridership (AVR) into the airport of 1.5.

Tier I

There will be 55.52 MAP and 15% of the emission reductions will occur by January 1, 1994.

Tier II

There will be 118 MAP and 85% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

2.59 Tons/Day CO Reduction by 1994.

Tier II

14.66 Tons/Day CO Reduction by 2010.

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Indirect source controls can be applied to facilities which may not directly produce emissions themselves, but induce emissions through activities which attract mobile sources. In the case of airports, the mobile sources are aircraft, ground support vehicles, and automobiles. An indirect source regulation could reduce emissions from air passenger autos and other vehicles by promoting transit usage and reducing peak hour congestion within the airport ground access system.

Except for one control measure (off-airport terminals), emission control measures were not specifically developed to mitigate emissions from airport ground access in the 1979 and 1982 AQMPs. However, since then studies conducted by SCAG have shown that the large majority of airport-related emissions originate from air passengers driving to and from airports. Also, the proportional contribution of these emissions to total airport-related emissions is increasing as airports continue to expand and their ground access congestion during peak hours continues to worsen. Hence, it is important to give special consideration to resolving the airport ground access problem in the AQMP process.

Regulatory History

Ground access emissions to airports were addressed in a limited fashion in the 1982 AQMP. The purpose of I25 Off-Airport Terminals was to reduce running emissions resulting from congestion by providing off-site terminals. The terminals would be linked to the airport by a direct express coach service and would combine parking and other terminal facilities with an appropriate level of air passenger processing, including ticketing and baggage check-in.

No such terminals have been constructed or are currently planned; however, a "Flyaway Service" linking Van Nuys and LAX airports with express bus service does provide airline ticketing on a limited basis.

I27 LAX Ground Access Project for the City of L.A. was designed to prevent excessive ground access congestion in the following manner: (1) increasing central terminal area roadway and curbside capacity; (2) improving parking and circulation through design changes and use of TSM; (3) expanding the parking capacity in the airport; (4) expanding the parking capacity at peripheral lots; (5) encouraging regional bus/HOV access; (6) encouraging the use of regional remote parking lots and terminals; and (7) inclusion of various design and structural provisions within and on the elevated roadway structure for conventional automated shuttle service.

O16 Indirect Source Controls called for the preconstruction review of the construction or modification of an indirect source in order to determine its potential impact on air quality by incorporating specific design guidelines that minimize auto running and idling time.

Although the Clean Air Act Amendments of 1977 limited federal authority

over indirect sources to the review of federally assisted projects, they left to the discretion of states the inclusion of indirect source regulations in their state implementation plans. In 1985, at least nine states, not including California, had some type of indirect source regulation in their plans.

Indirect source regulation was included as a high priority further study measure in both the 1979 AQMP and its 1982 revision. In the fall of 1987, the California State Legislature gave explicit authority to the SCAQMD, through the passage of SB 151, to implement indirect source regulations. The District has taken a first step to exercise that authority by passing a rule (Regulation XV) which requires companies with over 500 employees (eventually 100) to prepare and implement trip reduction plans.

CONTROL METHODS

Local governments would adopt an ordinance by January 1, 1990, aimed at ground access systems and related facilities at air carrier airports in the region. It would be implemented by requiring local airport operators to obtain permits for new and existing air carrier airport facilities. The permits would allow air passenger growth up to levels corresponding to the capacity of existing facilities, beyond which new permits would be required. To receive a permit, an airport operator would need to prepare a plan with three elements:

- o Trip Reduction Plan- This plan would be designed to induce airport employees (including franchises on airport property) to rideshare and use transit. It would be subject to the same or similar requirements as the District's Regulation XV, which is to be applied to large employers at air carrier airports, such as the City of Los Angeles Department of Airports. This measure would diverge from the requirements of Regulation XV in that all employees on airport property would be considered working under a single entity directed by the airport operator. Therefore, all employees of the airlines, cargo companies on airport-leased land, food service and rental car employees, etc., would be included in the airport's trip reduction plan. However, employees working night shifts would be exempted. The plan would be subject to the same or similar trip reduction targets and review requirements as Regulation XV. The multiple entities involved in the implementation of the plan would be coordinated by a professional transportation coordinator such as employed by many transportation management associations (TMA's).
- o Airport Facility Plan- This plan would seek to integrate features in new airport facilities that promote transit usage and ridesharing. It would ensure that new terminal facilities include such components as bus shelters and bench improvements, and satellite transportation centers for receiving high-occupancy vehicles such as buses and vans, as well as light rail facilities. It would also promote transit and ridesharing parking policies for automobiles, preferential access/egress for ridesharers, and shuttle service from remote lots on airport property, using clean-burning fuels.

- o Ground Access Improvement Plan- Airport operators would also be responsible for developing (but not entirely implementing) an overall ground access improvement plan including major arterials on off-airport property. This would involve coordination with local, subregional, and regional entities. SCAG has documented the magnitude of the ground access problem for each airport, and intends to prepare a regional airport ground access plan in the future. Also, many jurisdictions have prepared transportation improvement plans around airports. This plan would contain recommended measures such as:
 - o Major road extensions and widenings
 - o Transit system management (TSM) improvements such as signing, striping, removal of on-street parking, one-way streets, and interchange improvements
 - o Transit improvements such as scheduling and routing improvements, park-and-ride lots/remote terminals on off-airport property, extension of light rail facilities to airports, and computerized transportation information systems to increase awareness of transit options
 - o Demand management measures that would include such features as the formation of TMA's for nearby employment centers which share the airport access system, and peak-hour pricing of air service to reduce congestion during peak hours. Pricing techniques to shift demand to off-peak hours, such as increased landing fees during peak hours, would have the added benefit of increasing the usable capacity of airports. Pricing policies would also be employed to provide incentives for the utilization of airport shuttle/paratransit services which use clean-burning fuels. It should be noted that the proposed use of pricing policies to shift peak hour demand at Boston's Logan Airport is currently under litigation.

The trip reduction plan would need to demonstrate an ability to meet ridership targets established by local government in cooperation with the District. Each individual airport operator would have the flexibility to select those measures that are most appropriate to his airport, as long as the plan could meet the trip reduction targets.

The airport facility plan element would be implemented by the District through preconstruction review of new terminal and parking facilities. The types of design and operational features that would serve to promote ridesharing and transit use would also be defined by the Local government. The standards would be flexible enough to respond to airports of different sizes and geographic settings.

The ground access improvement element would have few legal ramifications beyond the requirement to prepare a plan. It would be seen as an overall expression of each airport's priority needs for ground access improvements, and would be used accordingly in efforts to increase state and federal

funding support for ground access improvements in the region. High priority improvement projects from all of the airports' plans would be combined to form a component of the Regional Transportation Plan.

Failure to meet ridership targets would require the submittal and approval of a revised plan with additional trip reduction incentives. Airport facility and ground access improvement plans would be periodically updated to reflect the implementation of projects and new facility needs as airports expand.

The ordinance would require that baseline work trip data be generated. Upon implementation the jurisdiction would be required to monitor the progress and effectiveness of the ordinance, and report results and baseline data annually to SCAG for incorporation into the RFP Report.

SCAG, Airport operators, and local governments would conduct studies of local airport ground access problems to identify additional solutions by January, 1990.

In the absence of action by local governments or local airport operators, the SCAQMD would adopt an indirect source regulation by January 1, 1991, having the same requirements.

IMPLEMENTATION ISSUES

The budgets of airports are tightly constrained by federal legislation, and contractual agreements with airlines which typically set fees at rates just sufficient to cover programmed airport capital and operating costs. The ability of airports to participate in off-airport ground access projects is limited. New funding sources need to be explored to help finance priority airport ground access projects, as well help support case studies/demonstration projects needed to test the feasibility of potential measures involving new technology.

CONTROL COST

The cost of individual trip reduction plans prepared for each airport would depend upon the specific incentives offered. The cost of a full-time ridesharing coordinator needed to implement the trip reduction plans would run from \$28,000 to \$35,000. The cost of constructing facility and ground access improvements would depend upon the specific improvements proposed for each airport, and could range from several hundred dollars for minor intersection improvements, to several million dollars for remote terminals or park-and-ride lots.

OTHER IMPACTS

Reducing congestion around airports would result in decreased delays for the air traveler in accessing airports, and decreased noise and safety hazards in surrounding communities. Increased airport capacity could be made available from strategies in the ground access improvement plans designed to shift air travel demand to off-peak hours. There could be

slightly increased diesel emissions resulting from the greater use of buses and vans by air travelers and airport employees (unless alternatively-fueled vehicles are used). This regulation would increase the administrative responsibilities of airport operators.

LEGISLATIVE/RESEARCH NEEDS

New legislation is needed by January, 1992, to increase available state and federal funding for airport ground access improvements. The potential application of new technology, such as computerized information systems and the use of pricing techniques to reduce peak hour aircraft and ground access congestion, should be explored through special studies/demonstration projects. Airport operators, in conjunction with local jurisdictions, may need to conduct special studies of their airport's ground access problem in order to identify acceptable solutions.

The construction of remote lots/terminals on off-airport property as a method of alleviating on-airport congestion could merit special attention. On the regional level, studies should be conducted concerning the potential to alleviate ground access problems by shifting demand away from existing airports. Such strategies could entail constructing new, medium-sized facilities in urban fringe areas, or building short take-off and landing (STOL) facilities in urban core locations.

IMPLEMENTATION ASSUMPTIONS

Tier I

It is assumed by January 1, 1994 there will be 55.52 million passengers (MAP), 750 airport employees per MAP, and an average vehicle ridership (AVR) of 1.5 and 15% of the emission reductions will occur. In addition, it is assumed that there will be the adoption by January 1, 1990 of a local government Airport Operators.

Tier II

It is assumed between 1994 and 2010 there will be 118.32 MAP. (The previous assumptions remain constant) and 85% of the emission reductions will occur.

INDICATORS

A total of 266,034 VMT are estimated to be reduced by this measure by 2000, assuming 90.12 million air passengers (MAP) in the region, 750 airport employees per MAP, average commute distance of 19.4 miles, and average vehicle ridership (AVR) increase from the measure from 1.18 AVR to 1.5 AVR. A total of 349,321 VMT are estimated to be reduced by 2010, assuming 118.32 MAP and other previous assumptions. This analysis does not account for some extra driving that would occur from carpoolers driving to meet points, and from additional cars left at home.

Tier I

Based on the implementation assumptions, Vehicle Miles Traveled (VMT) will be reduced by 52,398.

Tier II

Based on the implementation assumptions, VMT will be reduced BY 296,922.

PRIMARY BENEFIT

Tier I

CO will be reduced by 2.59 tons/day.

Tier II

CO will be reduced by 14.66 tons/day.

REFERENCES

South Coast Air Quality Management District, Regulation XV, December, 1987.

Southern California Association of Governments, Airport Ground Access Issue Paper, January, 1987.

Southern California Association of Governments, Airport Mitigation and Management Study, December, 1985.

AQMP COMMITMENT SCHEDULE

MEASURE : 8. AIRPORT GROUND ACCESS

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | ### | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGS. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | ### | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- Through the adoption of a local Airport Operators rule by January 1, 1990 or SCAQMD Indirect Source regulation for airports by January 1, 1991, reduce the number of air passenger auto trips generated by airports.
- SCAG, Airport operators, and local governments conduct studies of local airport ground access problems to identify additional solutions by January, 1990.
- Local governments and airport operators work to increase state and federal funding for airport ground access improvements by January, 1992.

9. REPLACEMENT OF HIGH-EMITTING AIRCRAFT

SUMMARY

SOURCE CATEGORY: Aircraft

CONTROL METHODS: Tier I

Enact MOU by January 1, 1990 between Los Angeles Department of Airports and other airport operators in the region to phase-out FAR Part 36 Stage II aircraft, and transition to all Stage III aircraft by January 1, 1992.

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

Airport operators, Airlines, FAA

IMPLEMENTATION
ASSUMPTIONS:

Reduction in aircraft emissions as a result of 100% of the permitted aircraft engine types being Stage III.

Tier I

10% of the emission reductions will occur by January 1, 1994.

Tier II

90% of the emission reductions will occur between 1994-2010.

PRIMARY BENEFIT:

Tier I

0.60 Tons/Day ROG Reduction by 1994.

Tier II

5.2 Tons/Day ROG Reduction by 2010.

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Noise produced by air carrier aircraft is regulated through certification

requirements included in Federal Aviation Regulation (FAR) Part 36 and Part 91. "Stage I" aircraft are the noisiest, and are currently prohibited by the FAA from operating out of airports in the country. Stage II aircraft are quieter than Stage I. The quietest aircraft are Stage III, which are generally newer aircraft with new engine types, such as the MD-80, B-737-300, and B-767 aircraft.

The FAA has not set a deadline for eventual phase-out of Stage II aircraft (although legislation to do so is currently under consideration). However, several airports in the region have either directly or indirectly restricted their operations to Stage III aircraft as part of their noise abatement programs. These include John Wayne, Burbank, and Long Beach airports.

Stage III aircraft generally produce fewer emissions than Stage II. For instance, the B-737-300 aircraft (Stage III), compared to the B-727 aircraft (Stage II) produces a 88.1% reduction in HC emissions, a 53% reduction in CO emissions, and a 43.1% reduction in NOx emissions per aircraft operation. Although enacted for noise reduction purposes, airports which have restricted their operations to Stage III aircraft generally produce fewer emissions per aircraft than other airports.

An exception to the above conclusion could occur if airlines retrofit their existing engines with "hush kits" designed to convert Stage II to Stage III engines. Although currently not in use, several firms are refining the technology to convert DC-8 aircraft (Stage II) to meet Stage III specifications. Such conversions, although producing quieter engines, would not result in either greater fuel efficiency or cleaner engines, and would therefore not advance air quality objectives.

Airlines could be inclined to retrofit their engines instead of re-engining (i.e., replacing the entire engine) or buying new aircraft, because the increased fuel efficiency of the latter does not result in substantial savings in fuel costs when fuel prices are relatively low. Additional incentives must be created to discourage the retrofitting of engines as a method of complying with Stage III requirements.

Regulatory History

John Wayne Airport has been an exclusively Stage III airport since the late 1970's. Although the airport does not formally prohibit Stage II aircraft, only Stage III aircraft can meet its stringent noise limitation criteria.

At Burbank Airport, in 1984 a noise policy called for a gradual phase-in of Stage III aircraft at the airport; Burbank currently is exclusively Stage III, thanks to the cooperation of the airlines.

Long Beach Airport is currently entirely Stage III due to a combination of stringent noise criteria and joint cooperation between the airport and airlines. In 1985, a task force appointed by the City of Long Beach developed a plan to restrict the airport to the quietest Stage III aircraft in exchange for an increase in aircraft operations. However, this plan was

rejected by the city council. The future of noise restrictions at the airport is currently under litigation.

CONTROL METHODS

The control method for this measure would entail broadening the application of policies limiting operations to Stage III aircraft to all air carrier airports in the region. The L.A. Department of Airports would enact by January 1, 1990, a Memorandum of Understanding (MOU) with the airport operators to phase out FAR, Part 36 Stage II aircraft and transition to all Stage III aircraft by January 1, 1992.

LAX and Ontario airports currently serve many all-cargo and international (primarily foreign) aircraft which are Stage II, to which this measure would apply. Air carrier aircraft are currently about 43% Stage III at LAX and 23% at Ontario. LAX is projected to reach about 70% Stage III by the year 2000 without the enactment of the MOU.

The retrofitting of existing Stage II engines for noise control purposes would not be an admissible method of complying with this measure. Airport operators' authority to mandate absolute restrictions on aircraft types is currently being challenged by both the airlines and the FAA. Disincentives, such as increased landing fees for Stage II aircraft, could sufficiently speed the conversion to Stage III aircraft so that targets would be met. Retrofitted aircraft would not be exempt from the increased fees. The application of additional restrictions, such as stringent individual aircraft noise limitations, may be necessary if such disincentives are inadequate to meet the targets.

The MOU would require that baseline aircraft emissions data be generated. Upon implementation the jurisdiction would be required to monitor the progress and effectiveness of the agreement and report results and baseline data annually to SCAG for incorporation into the RFP report.

IMPLEMENTATION ISSUES

This measure would rely upon the compliance of airport operators to be implemented. Specifically, the Los Angeles Department of Airports, which runs the only air carrier airports in the region (i.e. LAX and Ontario) with Stage II aircraft, would be responsible for implementing this measure. Memoranda of understanding should be completed with affected airport operators.

Federal legislation, under consideration, to mandate a nation-wide cut off date for the complete conversion of Stage II to Stage III aircraft, could preempt the implementation of this measure.

Even though several airports in the region currently limit their operations to Stage III aircraft, the FAA could view the adoption of this measure as a local infringement upon a federal prerogative. This measure would warrant consultation with the FAA prior to implementation.

CONTROL COST

The cost of upgrading aircraft fleets with newer aircraft is a cost commonly assumed by airlines, although this measure could prompt them to upgrade sooner than they had anticipated. The increased costs to airlines of taking the option of re-engining Stage II aircraft with Stage III engines is estimated at \$5 to \$7 million per aircraft.

OTHER IMPACTS

This measure would particularly impact all-cargo and foreign airlines which have a high percentage of Stage II aircraft, and could temporarily disrupt their operations in the region while they converted their fleets in compliance with this measure. The measure could therefore have potential impacts upon foreign trade. Noise impacts would be reduced at airports currently without restrictions on Stage II aircraft. The availability of some flights to the traveling public could be temporarily reduced if airlines are slow to replace Stage II with Stage III aircraft, resulting in some aircraft withheld from service to the region.

LEGISLATIVE/RESEARCH NEEDS

The availability and use of "hush kit" technology for converting Stage II aircraft to Stage III should be monitored, particularly if aviation fuel prices remain low. Case studies would be needed to demonstrate the point at which raising landing fees for Phase II aircraft would begin to discourage their use. Any proposed federal legislation to enact restrictions on Phase II aircraft at the nation's airports should be closely monitored, as well as proposed legislation which would restrict the ability of local operators to raise landing fees without federal approval.

IMPLEMENTATION ASSUMPTIONS

This measure assumes that 100% of the aircraft will have Phase III engines by 2010 and that none of those engines will be noise-retro-fit Phase II engines.

Tier I

This measure assumes 10% of the emissions reductions will occur by January 1, 1994 through the enactment of an MOU between the Los Angeles Department of Airports and other airport operators in the region and the transition to Stage III aircraft by January 1, 1992.

Tier II

This measure assumes 90% of the emission reductions will occur between 1994 and 2010.

INDICATORS

Tier I and II

Based on the implementation assumptions, aircraft emissions will be reduced.

PRIMARY BENEFIT

Tier I

ROG will be reduced by 0.6 tons/day.

Tier II

ROG will be reduced by 5.2 tons/day.

REFERENCES

City of Los Angeles Department of Airports, Draft Environmental Impact Report, LAX 2000, February, 1988.

County of Orange, Amended Commercial Airline Access Plan and Regulation For John Wayne Airport, April, 1985.

Southern California Association of Governments, Airport Impact Mitigation and Management Study, December, 1985.




City of Burbank Noise Policy, 1984

AQMP COMMITMENT SCHEDULE

MEASURE : 9. REPLACEMENT OF HIGH-EMITTING

AIRCRAFT

COMMITMENT

| | | SCHEDULE | | | |
|------------------------|--|--|--------|---------|----------|
| ACTION | | EXAMPLES | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Enactment of MOU between airport operators and the L.A. Department of Airports by January 1, 1990.
- o Airport operators encourage the phase out of FAR Part 36 Stage II aircraft and transitioning to all Stage III aircraft by January 1, 1992.

10. GENERAL AVIATION VAPOR RECOVERY

SUMMARY

SOURCE CATEGORY: Aircraft

CONTROL METHODS: Tier I

Adopt SCAQMD regulation by January 1, 1990 to require vapor recovery systems to capture escaping emissions from fuel and storage tanks.

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

SCAQMD, airport operators, local governments

IMPLEMENTATION
ASSUMPTIONS:

85% of the aviation fuel vapor emissions will be reduced as a result of the installation of Phase II vapor recovery systems at 47 general aviation (GA) airports.

Tier I

10% of the emission reductions will occur by January 1, 1994.

Tier II

90% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

0.05 Tons/Day ROG Reduction by 1994.

Tier II

0.37 Tons/Day ROG Reduction by 2010.

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Hydrocarbons are emitted during the filling of aviation fuel storage tanks and the dispensing of aviation fuel from tank to airplane, due to escaping vapors displaced by rising fuel levels. The forty-seven general aviation

airports in the Basin (13,190 based aircraft in 1987) have not previously been subject to vapor recovery controls, such as the Phase II systems currently in use at gasoline stations in the Basin. Typically, several types of fuel are offered at general aviation airports, using several types of dispensing equipment. Also, dispensing facilities are either fixed or on trucks, to alleviate the need for aircraft to taxi to the facility (many airports offer both fixed and truck fuel dispensing).

Regulatory History

The District currently requires Phase II vapor recovery systems for transfer of automotive fuel from tanker truck to gasoline dispensing station, and from dispensing station to automobile fuel tanks. This program is about 85-90% effective in controlling evaporative hydrocarbon emissions.

CONTROL METHOD

The SCAQMD would adopt by January 1, 1990 a regulation requiring vapor recovery systems to capture aviation fuel emissions. Phase II vapor recovery systems would be required for the transfer of aviation fuel from tanker truck to dispensing station, with provisions to shut off transfer if the system malfunctions. Also, phase II vapor recovery systems would be required for aviation fuel dispensing systems, including transfer of fuel from dispensing station to truck, and from truck to aircraft fuel tank. The vapor recovery system would capture emissions that are displaced from fuel tanks by rising fuel levels. The system would be about 85% effective in controlling evaporative hydrocarbon emissions.

The regulation would require that baseline fuel tank emissions data be generated. Upon implementation the jurisdiction would be required to monitor the progress and effectiveness of the agreement and report results and baseline data annually to SCAG for incorporation into the RFP report.

IMPLEMENTATION ISSUES

Many general aviation airports have special fueling requirements, such as the need to sometimes fuel aircraft at a distance from the pump with long hoses (trucks are frequently used), and different types of nozzles required for the various fuel types provided. Also, different general aviation aircraft have a variety of fuel tank fittings, which could present problems in providing universally compatible vapor recovery apparatus.

CONTROL COST

For phase II vapor recovery, assuming 100 aircraft per pump, and \$5000 per pump retrofit, would amount to \$723,000 by the year 2000, and \$794,000 by 2010. These totals are derived using SCAG's forecast of general aviation based aircraft.

OTHER IMPACTS

The increased cost of this measure may result in some fixed based operators, many of whom are marginal operators, going out of business. The retrofitting of existing pumping facilities would require a period of underground construction/engineering work, which could temporarily disrupt airport operations. The added apparatus, because of its extra weight (due to double hoses), could cause problems and inconvenience in fueling aircraft at a distance from the pump, and could require special apparatus.

LEGISLATIVE/RESEARCH NEEDS

Study is needed of methods to achieve compatibility of vapor recovery apparatus with the various fuel tank fittings of different general aviation aircraft, and with the need to sometimes service aircraft at a distance from the pump with long hoses. Also, the possibility that general aviation fuel tanks, because they are fully vented to the atmosphere, would decrease the estimated effectiveness of this measure, needs to be explored (it is possible that vapor recovery apparatus could be designed to overcome this problem).

IMPLEMENTATION ASSUMPTIONS

This measure assumes that Phase II vapor recovery systems will be installed at all forty seven (47) general aviation airports and that there will be a system effectiveness of 85%.

Tier I

This measure assumes 10% of the emission reductions will occur by January 1, 1994 through the adoption by January 1, 1990 of a SCAQMD regulation.

Tier II

This measure assumes 90% of the emission reductions will occur between 1994 and 2010.

INDICATORS

Tier I and Tier II

Based on the implementation assumptions aviation fuel vapor emissions will be reduced by 85%.

PRIMARY BENEFIT

Tier I

ROG will be reduced by 0.05 tons/day.

Tier II

ROG will be reduced by 0.37 tons/day.

REFERENCES

Southern California Association of Governments, General Aviation Systems Study--Phase II, December, 1987

Southern California Association of Governments, Draft Palmdale Airport Air Quality Study (pending)

AQMP COMMITMENT SCHEDULE

MEASURE : 10. GENERAL AVIATION VAPOR RECOVERY

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|--|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | <div>EXISTING LOCAL GOVERNMENT OPTIONS</div> | <ul style="list-style-type: none"> o GENERAL PLANS o RHNA | | | |
| FACILITATE | | <ul style="list-style-type: none"> o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | <ul style="list-style-type: none"> o ZONING o BUS. LICENSES | | | |
| ASSIST | | <ul style="list-style-type: none"> o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS | <div>COOPERATIVE PARTNERSHIPS FORGED</div> | <ul style="list-style-type: none"> o MOU'S & JPA's | | | |
| LEGISLATION | | <ul style="list-style-type: none"> o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION | <div>TOP DOWN CONTROL</div> | <ul style="list-style-type: none"> o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o Require vapor recovery systems on fuel and storage tanks by SCAQMD regulation by January 1, 1990.

11. RAIL CONSOLIDATION TO REDUCE GRADE CROSSINGS

SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Truck, Trains

CONTROL METHODS: Tier I

- o Establish a Joint Powers Agency by January 1, 1990 to develop the consolidated railroad corridor along Alameda Street for rail access to the Ports of Los Angeles and Long Beach and between downtown Los Angeles and the San Bernardino area.
- o Joint Powers Authority, during 1990 to obtain financing.
- o Construction of corridor to begin in 1991.

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

A new Joint Powers Authority would need to be formed by the Ports of Los Angeles and Long Beach and other agencies to implement the ports access consolidation project. A modified or completely new JPA would be created for the extension of the corridor to San Bernardino. Other implementing agencies include SCAG and SCAQMD.

IMPLEMENTATION
ASSUMPTIONS:

Consolidated freight train corridor along Alameda street from the ports of Los Angeles and Long Beach to downtown Los Angeles and to San Bernardino area.

Tier I

2% of the emission reductions will occur by January 1, 1994.

Tier II

98% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

0.50 Tons/Day of CO reduction by 1994.

Tier II

24.4 Tons/Day of CO reduction by 2010.

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DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

In 1984 SCAG published the San Pedro Bay Ports Access Study, Phase 2: Railroad Access, which evaluated a number of alternatives for improving rail access to the Ports of Los Angeles and Long Beach. The study concluded that the best overall strategy for minimizing adverse impacts of port-generated rail traffic would be to consolidate the train traffic onto the Southern Pacific San Pedro Branch, which parallels Alameda Street, and grade separate the major crossings along the corridor. This concept was adopted by the Executive Committee in December of 1984. Since that time the Alameda Corridor Task Force has been working to establish the financing and institutional arrangements necessary for implementing the project.

The public sector has not developed any detailed plans for consolidation of rail traffic on the main lines east of Los Angeles. However, the Santa Fe Railway is interested in selling its Second Subdivision which runs from Los Angeles Union Station to Pasadena and to San Bernardino, and reroute all of its trains to the Third Subdivision which runs from Los Angeles to Fullerton and Riverside.

Regulatory History

The Public Utilities Commission (PUC) regulates safety at railroad grade crossings. Designs for new crossings, or improvements to existing grade crossings and separations must be approved by the PUC. The Interstate Commerce Commission (ICC) regulates the railroad industry, and reviews applications for railroad mergers. Since the passage of the Staggers Rail Act of 1984, however, the railroads have been much freer to set rates and negotiate contracts with shippers.

CONTROL METHODS

A joint powers authority would be established by January 1, 1990, by the Ports of Los Angeles and Long Beach and other state and federal agencies to implement the proposed rail consolidation. The proposed consolidated railroad corridor along Alameda Street would consist of a double track line with centralized traffic control. All port-related train traffic would use this corridor from the ports to downtown Los Angeles. This would involve rerouting Union Pacific, Santa Fe, and Southern Pacific trains to the SP San Pedro Branch. Under this plan, the long through trains to the ports would avoid the Santa Fe Harbor Subdivision with its 92 grade crossings, the Union Pacific San Pedro Branch with its 33 grade crossings, and the Southern Pacific Wilmington Branch with its 39 crossings. The SP San Pedro Branch has 34 crossings, but the 16 major arterials would be grade separated under this control strategy.

In 1990 the JPA would conduct engineering studies, and obtain financing and environmental clearance. Construction of the corridor would begin in 1991 and extend to 2000. The JPA would study, by 1993, the feasibility of extending the consolidated route from Los Angeles to San Bernardino. The JPA would conduct, between 1994 and 1998, the engineering study, and obtain financing and environmental clearance for the consolidated corridor between Los Angeles and San Bernardino. The construction of this corridor would begin in 1998 and extend to 2010.

The joint powers authority (JPA) would be required to generate baseline vehicle hours of delay data. Upon implementation, the JPA would be required to monitor the progress of construction and the effectiveness of the grade separations and report the results and baseline data annually to SCAG for incorporation into the RFP Report.

LEGISLATIVE\RESEARCH NEEDS

There is clearly a need for additional federal and state funding for grade separations. The Public Utilities Commission (PUC) administers a small program which can only fund 2 to 3 projects per year. The PUC receives about 100 applications per year, but most of these projects are not constructed because there is only \$15 million per year for the entire state.

The feasibility of consolidating rail traffic from the ports to downtown Los Angeles has been thoroughly investigated by SCAG. No comparable feasibility study for consolidating the main lines east of Los Angeles has been performed.

The feasibility of establishing a Public Utilities Commission regulation on the maximum time a grade crossing can be closed by a moving train should be studied. Currently, there is a PUC regulation that states that a stopped train cannot block a crossing for more than 10 minutes. But if the train is moving, no matter how slowly, there is no regulation that applies.

CONTROL COSTS

Track and signal improvements would cost about \$60 million. At least 16 grade separations would be constructed at an estimated \$10 million each. Total cost of the project would be \$220 million in 1983 dollars.

IMPLEMENTATION ISSUES

The Alameda Corridor Task Force is currently developing a financial plan and investigating the institutional arrangements necessary for implementing the proposed consolidated corridor to the ports. The Ports of Los Angeles and Long Beach have proposed to develop a Joint Powers Authority which would be responsible for construction of the system. Negotiations are currently under way regarding the sharing of costs for the project. The large capital cost and the willingness of the various parties to contribute financially are the primary obstacles to implementing the project.

OTHER IMPACTS

Detailed calculations of the impact of consolidation on grade crossings east of downtown Los Angeles have not been made. However, according to data from the Public Utilities Commission, the number of daily trains on the various main lines is as follows:

| | |
|-----------------------------|-------------------|
| Santa Fe Second Subdivision | 8 trains per day |
| Santa Fe Third Subdivision | 30 trains per day |
| Union Pacific Main Line | 17 trains per day |
| Southern Pacific Main Line | 35 trains per day |

The Santa Fe has proposed to sell their Second Subdivision and reroute freight trains to the Third Subdivision. Any additional consolidation on the main lines would be very difficult, from an institutional perspective. However, if all trains were routed along an upgraded Southern Pacific main line (additional tracks would be required) and many grade separations were constructed along this route, then grade crossing delays could be significantly reduced. This scenario is not included in emission reduction calculations for this measure.

In addition to the grade crossing benefits, other impacts of the ports access consolidation in 2010 include a 74% reduction in the number of train stoppages, a 29% reduction in train hours of operation, a 50% increase in train speeds (from 20 miles per hour to 30 miles per hour) and a 48% reduction in impacts on population living within 500 feet of the tracks. A reduction in train hours of operation could also lead to a reduction in train emissions.

A detailed assessment of the impacts of consolidation east of downtown Los Angeles has not been attempted.

IMPLEMENTATION ASSUMPTIONS

In the year 2000, assuming 37 port-related trains, there would be about 3,190 vehicle hours of delay without consolidation. With consolidation and assuming 10 new grade separations, there would be 710 vehicle hours of delay, or a 78% reduction. There would also be an additional savings of 953 vehicle hours due to reduced intersection delay. Total savings in delay in the year 2000 would be approximately 4,143 vehicle hours per day.

In the year 2000, there would be an estimated daily reduction of 14.5 train hours of operation due to consolidation. In 2010, there would be an estimated daily reduction of 34.9 train hours of operation due to consolidation.

In the year 2010, assuming 71 port-related trains, there would be 6,908 vehicle hours of delay at grade crossings without consolidation. With consolidation and assuming 16 grade separations there would be 691 vehicle hours of delay per day, or a 90% reduction. The 16 grade separations must clear Alameda Street as well as the rail line, thus there would be additional savings in intersection delay, estimated at 2,033 vehicle hour

per day. The total savings in delay would be approximately 8,240 vehicle hours per day. These savings can be directly translated into reductions in emissions..

Tier I

This measure assumes 2% of the emission reductions will occur by January 1, 1994 through the establishment of a JPA by January 1, 1990 to develop the consolidated railroad corridors (Alameda Street and Los Angeles to San Bernardino); obtaining of financing in 1990 by the JPA; and construction beginning by 1991.

Tier II

This measure assumes 98% of the emission reductions will occur between 1994 and 2010.

INDICATORS

Tier I

A 18% delay reduction at rail crossings, 5.8% reduction in train hours of operation.

Tier II

A 88.2% delay reduction at rail crossings, 28.4% reduction in train hours of operation.

PRIMARY BENEFIT

Tier I

CO will be reduced by 0.50 tons/day.

Tier II

CO will be reduced by 24.4 tons/day.

REFERENCES

SCAG, San Pedro Bay Ports Access Study, Phase 2: Railroad Access, October 1984.

AQMP COMMITMENT SCHEDULE

MEASURE : 11. RAIL CONSOLIDATION TO REDUCE GRADE
CROSSINGS

COMMITMENT

| | | SCHEDULE | | | |
|------------------------|---|--|--------|---------|----------|
| ACTION | | EXAMPLES | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS FORGED ↓ | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### | ### | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Ports of Los Angeles and Long Beach and local governments establish a joint powers authority by January 1, 1990, to develop consolidated railroad corridor along Alameda Street for Port rail access and between Los Angeles and San Bernardino.
- o Joint Powers Authority to obtain financing.
- o Joint Powers Authority to begin construction of corridor (1991).

12. PAVED AND UNPAVED ROADS AND PARKING LOTS

12. a. STORAGE AND MOVEMENT OF FINE PARTICULATE MATERIALS

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SUMMARY

SOURCE CATEGORY: Entrained Road Dust - Paved Roads

CONTROL METHODS: Tier I

- o By January 1, 1990 the SCAQMD to adopt a regulation prohibiting outdoor storage of fine particulate matter.
- o By January 1, 1990 ARB to enact legislation to require the installation of liners on truck beds and covering of loads for transportation of particulate matter.

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

California Air Resources Board, California Highway Patrol, local enforcement agencies, and SCAQMD.

IMPLEMENTATION ASSUMPTIONS FOR PAVED AND UNPAVED ROADS AND PARKING LOTS:

50% of all unpaved roads and parking lots are to be paved.

Tier I

13% of the projected emission reductions will occur by January 1, 1994.

Tier II

87% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT FOR PAVED AND UNPAVED ROADS AND PARKING LOTS:

Tier I

29.8 Tons/Day PM10 reduction by 1994.

Tier II

193.2 Tons/Day PM10 reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

The movement and storage of fine particulate materials contributes to fugitive dust emissions resulting in fine particulate matter (PM10) concentrations. The current method of transporting these materials on uncovered truck beds with bed joints that are not tightly fitted or sealed permits wind erosion of fine particulates and the depositing of materials in the roadway. Vehicles generate fugitive dust re-suspension from these roadway materials and debris. This source of road dust contributes to the paved road PM10 emissions as well. The outdoor storage of soil-like materials also permits wind erosion, which creates visibility and air quality degradation. In order to control these emissions, there is a need for stronger regulations and enforcement.

Regulatory History

This control measure was not included in the 1979 AQMP or the 1982 AQMP revision. However, there are two existing state vehicle code regulations which pertain to transportation control methods. 1) A prohibition on spilling a load other than water or live bird feathers, and 2) a requirement for loads that have dump site destinations to be covered. These regulations have not been entirely successful in preventing fugitive dust emissions from truck hauling activities and need to be supplemented by more stringent regulations and enforcement.

CONTROL METHODS

The SCAQMD would adopt a regulation by January 1, 1990, prohibiting outdoor storage of fine particulate matter. The California ARB would enact legislation by January 1, 1990, to require the installation of liners on truck beds and covering of loads transporting fine particulate matter. This control measure is directed at reducing fugitive dust emissions by preventing wind erosion and the spillage of materials onto the roadways in order to reduce PM10 emissions. The methods of control are designed to address the transporting and storage of particulate materials which have the capacity to break down into fine particulate matter (smaller than 10 microns) and be suspended in the air.

The installation of liners on truck beds and covering these types of load will prevent spillage of the load onto public roadways, and will prevent wind erosion during transit. In order to reduce the fugitive dust emissions generated by the wind, outdoor storage of fine particulate materials should be prohibited.

Currently, water suppression is a common method used to control fugitive dust from transportation and storage of these materials. However, water suppression methods is only effective with frequent re-applications. Expanding the requirements for water suppression, as a control method, would increase the demand for a limited resource. The development of the proposed control methods described above, would render water control

methods obsolete and reduce the reliance on water to prevent fugitive dust emissions. Water suppression is not considered an applicable control method.

The implementing agencies would be required to generate PM10 emissions data on the hauling and storage of particulate matter. Upon implementation, the agencies would be required to monitor the progress and effectiveness of the regulations, and report the results and baseline data annually to SCAG for incorporation into the RFP Report.

EMISSIONS REDUCTION

In the 1985 emissions inventory, data on airborne fine particulates that result from truck movement and storage is limited to paved road emissions. Therefore, emissions reduction calculations for this measure are divided into two categories: those emissions not in the inventory that are a result of wind erosion from truck beds and storage sites; those emissions in the inventory from particulate materials that spill onto paved roadways and are re-suspended by other vehicles' movement.

No estimate of the impact of control methods directed at preventing wind erosion during the transportation or storage of fine particulate materials can be made at this time. Further research is required to develop an inventory of fugitive dust emissions from these sources, and to quantify the emissions reduction of the control strategies.

The emissions reduction resulting from the requirement of truck bed liners and covers will vary depending upon the type and characteristics of the material, the roadway's vehicle miles traveled (VMT), and the way in which the material is re-suspended. Because there is a lack of appropriate data, the paved road emission reductions are based on VMT and trips, not these control methods. Further research is needed to quantify the emissions reduction from these control methods.

OTHER IMPACTS

The prevention of spilled loads on the transportation routes will mean cleaner roads, a decrease in the demand for street sweeping and clean up programs, and a corresponding effect on governmental budgets to provide these types of public works services, a reduced nuisance to other vehicles on the road created by flying debris, and reduced traffic congestion caused by particulate materials in the road.

LEGISLATIVE/RESEARCH NEEDS

In order to implement this control measure, the Air Resources Board would need to enact a regulation requiring covers and liners on truck beds that haul fine particulate materials. The program would need to be coordinated with the California Highway patrol and local jurisdictions enforcement agencies to provide for most effective enforcement. The SCAQMD would need to develop a regulation prohibiting outdoor storage of these materials. Further research is required to develop a quantifiable inventory, determine

emissions reductions, and to identify additional control methods for these sources of fugitive dust. Further emissions reductions may be possible from an examination of the methods of loading/off loading these types of materials.

IMPLEMENTATION ASSUMPTIONS FOR PAVED AND UNPAVED ROADS AND PARKING LOTS

PM10 emission reductions referred to in this group of measures consist of 2 parts: 1) reduction in VMT and trips resulting from the implementation of all other transportation measures, and 2) the steps called for in 12b, Unpaved Roads and Parking Lots.

Tier I

This measure assumes that 13% of the emission reductions will occur by January 1, 1994 as a result in the reduction in VMT trips from all other transportation measures, with the adoption by January 1, 1990 of the SCAQMD Regulation and ARB Legislation.

Tier II

The remaining projected emission reductions, or 87%, will occur to 2010.

INDICATORS FOR PAVED AND UNPAVED ROADS AND PARKING LOTS

Paving of 50% of unpaved roads and parking lots.

PRIMARY BENEFIT FOR PAVED AND UNPAVED ROADS AND PARKING LOTS

Tier I

PM10 will be reduced by 29.8% tons/day.

Tier II

PM10 will be reduced by 193.2 tons/day.

REFERENCES





South Coast Air Quality Management District, Short Range Control Measures, Working Paper #4, November 1986

AQMP COMMITMENT SCHEDULE

MEASURE : 12.a. STORAGE AND MOVEMENT OF FINE

PARTICULATE MATTER

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|--|--|----------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o SCAQMD develop regulation by January 1, 1990, prohibiting outdoor storage of fine particulate matter.
- o ARB enact legislation by January 1, 1990, to require the installation of liners on truck beds and covering of loads for transporting of particulate matter.

12. b. UNPAVED ROADS AND PARKING LOTS

SUMMARY

SOURCE CATEGORY: Entrained Road Dust - Unpaved Roads

CONTROL METHODS: Tier I

- o ARB to conduct a study of PM10 emissions from paved and unpaved areas by January 1, 1990.
- o ARB, in collaboration with Caltrans, to develop a list of areas that need to be paved by January 1, 1993.
- o Local governments amend ordinances by January 1, 1994, to require paving of all vehicle maneuvering areas and parking facilities, according to ARB\Caltrans list.

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

Local Government, California Department of Transportation, Bureau of Indian Affairs, Bureau of Land Management, U.S. Forestry Service, National Park Authority, State Park Authority, and SCAQMD.

IMPLEMENTATION ASSUMPTIONS FOR PAVED AND UNPAVED ROADS AND PARKING LOTS

50% of all unpaved roads and parking lots are to be paved.

Tier I

13% of the projected emission reductions will occur by January 1, 1994.

Tier II

87% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT FOR UNPAVED ROADS AND PARKING LOTS:

Tier I

29.8 Tons/Day PM10 reduction by 1994.

Tier II

193.2 Tons/Day PM10 reduction by 2010.

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DESCRIPTION OF SOURCE CATEGORY AND CONTROL

Background

Vehicle movement over unpaved areas and wind erosion disturbs the soil creating fugitive dust emissions and degrades visibility. Water erosion and vehicle tires in unpaved areas transport unprotected soil to the roadway. This source of road dust contributes to paved road PM10 emissions.

There are currently several thousand linear miles of unpaved roads in the South Coast Air Basin. The following breakdown of unpaved roads covers Los Angeles, Riverside, Orange, and San Bernardino Counties.

There is no inventory of the number of acres of parking facilities and maneuvering areas which are not paved in the SCAB.

| <u>Jurisdiction</u> | <u>No. of Linear Miles of Roads</u> |
|--|-------------------------------------|
| Incorporated & Unincorporated County Roads | 1977.7 |
| Bureau of Indian Affairs | 27.8 |
| Bureau of Land Management | 14.0 |
| U.S. Forestry Service | 1860.87 |
| National Parks | 123.1 |
| State Parks | 136.6 |
| State Highways | 7 |
| ===== | |
| Total | 4147.07 |

Source: California Department of Transportation (1986 Road Inventories)

Regulatory History

This control measure first appeared in Working Paper No. 4, Short-Range Control Measures, November 1986. The measure was entitled, "Control of Fugitive Dust Emissions From Unpaved City Streets and County Roads", and was directed at reducing emissions resulting from the disturbance of unpaved road surfaces by vehicular traffic. The measure evaluated several control methods such as paving with asphaltic or bituminous pavements or the application of water, oils, calcium chloride, lignin sulfide, or sodium silicate. The control efficiencies ranged from 93% reduction for paving to 40% reduction for water application. Paving (or the application of chemical compounds to bind the dust, despite potential water quality impacts) was the preferred control method in that working paper.

CONTROL METHODS

ARB should conduct a study of PM10 emissions from paved and unpaved areas by January 1, 1990, and in collaboration with Caltrans, develop a list of unpaved areas of the state to be paved to reduce PM10 emissions on a cost effective basis by January 1, 1993.

Local government would adopt ordinances by January 1, 1994, to require the paving of vehicle maneuvering areas and parking facilities and prohibit parking on undeveloped property. All governmental entities with jurisdiction over roadways should allocate resources and initiate the paving and construction of drainage facilities on unpaved roads or install automobile and truck wheel washers and curbing. The ordinance would develop standards based on frequency of use, in accordance with the list developed by ARB and Caltrans.

This control measure is directed at reducing fugitive dust emissions by preventing wind and water erosion, dust transport, and vehicle disturbance of soil in order to reduce PM10 emissions. As was found in the Working Paper, paving is the preferred control method for unpaved roads, and vehicle maneuvering and parking facilities.

The roads with the largest Vehicles Miles Traveled (VMT) generate the highest levels of fugitive dust emissions and PM10 concentrations. For roads with a smaller VMT, paving may not be the most efficient method. The objective in these areas would be to prevent the transport of soil onto paved areas through the installation of curbing and wheel washers, until VMT increased to the point that paving becomes the more efficient method.

The majority of the jurisdictions in urban areas already require that vehicle maneuvering areas and parking facilities be paved. However, most of these requirements affect new construction and do not address non-conforming uses, undeveloped property, and some heavy industrial uses. This control measure is directed at these uses which are characteristically dispersed in subdivided parcels throughout the counties. The most effective means to control fugitive dust emissions from vehicle movement over unpaved areas is to pave or prohibit the parking of vehicles on undeveloped property.

The construction of adequate drainage facilities in both roadways and parking lots would prevent water eroded soil from collecting on roads and becoming a source of re-suspended road dust.

The application of water, gravel, oil or other types of chemical suppression methods is not considered a desirable control method to reduce fugitive dust emissions from these sources. The evaporation of water would require frequent re-applications of a limited resource. The emissions reductions benefits of gravel as a dust suppression method is unknown. Gravel are also a maintenance liability when used adjacent to paved areas. The application of oil and other types of chemical suppression methods could potentially contaminate the soil and may increase exposure to toxic

chemicals. The use of these materials would also be in conflict with the use reduction strategies of the Southern California Hazardous Waste Management Plan and possibly the Safe Drinking Water Act. Since there exist more environmentally sensitive means of control, these methods are not considered applicable control measures in this AQMP Revision.

The local government ordinances and the governmental agency's allocation programs would require that baseline inventory data be generated. Upon implementation, the jurisdiction would be required to monitor the progress and effectiveness of the ordinance and report results and baseline data annually to SCAG for incorporation into the RFP Report.

COST EFFECTIVENESS

Not determined.

OTHER IMPACTS

Paving unpaved roads and parking facilities will increase the amount of paved area in the SCAB. This will impact water absorption rates, drainage patterns, and amount of surface run-off. A substantial portion of the fiscal impact for infra-structure improvements which would be borne by local government which may not have the necessary funds.

LEGISLATIVE/RESEARCH NEEDS

In order to implement this control measure, local government ordinances would require amending to require the paving of all vehicle maneuvering areas, and parking facilities and to prohibit parking on undeveloped property. All the governmental agencies identified under the implementing agency section would be required to initiate the paving of roads (the priority being on those with the highest VMT); the construction of adequate drainage facilities; and, the installation of automobile and truck wheel washers and curbing. Additional research is needed to develop an emissions inventory for unpaved maneuvering areas and parking lots, and to determine the emissions reductions resulting from the implementation of these control measures.

IMPLEMENTATION ASSUMPTIONS FOR PAVED AND UNPAVED ROADS AND PARKING LOTS

PM10 emission reductions referred to in this group of measures consists of 2 parts: 1) reduction in VMT resulting from implementation of other transportation measures, and 2) the steps suggested in this measure.

The emissions inventory includes unpaved road emissions, but does not include unpaved maneuvering areas or parking facilities.

As reported in the Short-Range Control Measures' Appendices, there can be a 93% reduction in PM10 emissions by paving unpaved roads. However, a 50% control efficiency is assumed for this control method. The emission reductions for paving unpaved roads is based on this factor, in addition to a 26% reduction in vehicle miles traveled (VMT) and trips that will result

from the implementation of the other transportation measures.

The construction of drainage facilities and the installation of curbing and wheel washers prevent the accumulation of road dust which contributes to paved road-PM10 emissions. Since vehicles generate fugitive dust re-suspension from paved road dust, the emission reductions are also based on VMT, not these control methods. When further research is completed to quantify the emissions reduction from these control methods, there will be reductions in addition to VMT. This is attributed to the fact that this measure will result in less road dust to be disturbed by vehicle movement.

INDICATORS FOR PAVED AND UNPAVED ROADS AND PARKING LOTS

Paving of 50% of unpaved roads and parking lots.

PRIMARY BENEFIT FOR PAVED AND UNPAVED ROADS AND PARKING LOTS

Tier I

PM10 will be reduced by 29.8% tons/day.

Tier II

PM10 will be reduced by 193.2 tons/day.

REFERENCES






South Coast Air Quality Management District, Short Range Control Measures, Working Paper #4, November, 1986

California Department of Transportation, 1986 Road Inventories, 1986

AQMP COMMITMENT SCHEDULE

MEASURE : 12.b. UNPAVED ROADS AND PARKING LOTS

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|--|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS  FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- o ARB to conduct a study of PM10 emissions from paved and unpaved areas by January 1, 1990.
- o ARB in collaboration with Caltrans to develop a list of areas that need to be paved in the state by January 1, 1993.
- o Amend local government ordinances by January 1, 1994, to require paving of all vehicle maneuvering areas and parking facilities, according to the ARB, Caltrans list.
- o All applicable government agencies encouraged to initiate paving of roads, construction of adequate drainage facilities, and installation of automobile and truck wheel washers and curbing.

13. FREEWAY CAPACITY ENHANCEMENTS

SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Trucks, Heavy Duty Trucks

CONTROL METHODS: Tier I

o Program and implement Constrained Freeway Element of the adopted RMP from 1989-2010.

Tier II

o Secure funding for the Unconstrained Freeway Element of the adopted RMP, 1989-2010.

IMPLEMENTING AGENCIES:

CALTRANS, Transportation Commissions, SCAG

IMPLEMENTATION ASSUMPTIONS:

Freeways expanded by 875 lane miles; VMT reduced by 4%; VHT reduced by 11%

Tier I

25% of the emission reductions will occur by January 1, 1994.

Tier II

75% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

4.4 Tons/Day ROG reduction by 1994.

Tier II

13.3 Tons/Day ROG reduction by 2010.

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURES

Background

The amount of mobile emissions is greatly increased by traffic congestion.

As vehicle speeds decline, the emission rate of most pollutants increases significantly. The same volume and extent of vehicular travel will emit much less under conditions of free flow than under congested conditions.

The Regional Mobility Plan strategies contain large amounts of freeway capacity additions including: simple widenings, double-decking a number of existing facilities, and constructing entirely new freeway corridors. Both the mobility and air quality benefits in the Plan are largely attributable to this added freeway capacity.

Regulatory History

The 1979 AQMP contained measure H-77: Expand Capacity and Improve Flow on Highway Network. This measure called for a non-specific program of freeway improvements to achieve free flow traffic conditions. Relatively modest additional freeway capacity has been added to the system since adoption of this measure.

The 1979 Plan also included H88 Congestion Relief -- Freeway Widening. This strategy called for construction of 260 miles of median improvements and addition freeway lanes along existing segments of the freeway network in order to alleviate traffic congestion.

The 1982 Plan Revision contained no reference to added freeway capacity.

CONTROL METHODS

The method of control is to support the programming and implementation of the freeway capacity improvements identified in the 1988 Regional Mobility Plan. The plan calls for the construction of 800 lane-miles of freeway. The plan differentiates between two scenarios of funding, constrained and unconstrained. RMP projects under the constrained funding scenario, are those which have currently identified funding sources and mechanisms. Those projects for which new funding sources and mechanism have to be identified in the future, but are needed to meet the RMP goals are in the unconstrained funding scenario.

Specifically the measure requires the following actions:

- o Caltrans, Transportation Commissions and SCAG to program RMP constrained freeway projects between 1989 and 2010.
- o Caltrans to implement RMP constrained freeway projects between 1989 and 2010.
- o SCAG, Caltrans, and Transportation Commissions to develop and implement program to provide additional funding between 1989 and 1994.
- o Caltrans, Transportation Commissions and SCAG to program unconstrained freeway projects between 1994 and 2010.

The programming and implementation phases would require that VMT and VHT data be generated. Upon implementation the agencies would be required to monitor the progress and effectiveness of the measure and report results and baseline data annually to SCAG for incorporation into the RFP Report.

Those actions, facilities, and programs, which will be constructed or completed under existing or present funding capabilities, are called the "Constrained Program." Those actions, facilities, and programs, which require additional sources of revenue to be implemented, are called the "Unconstrained Program."

LEGISLATIVE/RESEARCH NEEDS

A variety of legislative and research efforts will have to be undertaken to develop major new funding mechanisms, designate new state highways, and address legal issues associated with other impacts.

OTHER IMPACTS

Implementation of the capacity improvements of the Regional Mobility Plan will contribute significantly to reduced congestion and travel times. Major environmental issues will be associated with right-of-way acquisition and construction. Some visual and noise impacts may also result from completed projects. The construction program will increase employment, and the overall improvement in mobility will contribute to continued economic vitality of the region.

IMPLEMENTATION ISSUES

The implementation of such an ambitious freeway construction program will involve a host of major obstacles. Each project will have to overcome significant but unspecified environmental problems, especially in the new corridors. Significant legal actions may ensue. Engineering problems may prove to be of significant magnitude for several of the double-decking provisions. Development of an adequate funding program will be a major problem. Each of the issues will be subject to competing political forces.

IMPLEMENTATION ASSUMPTIONS

This measure assumes that 800 lane miles of freeway capacity will be added to the system by 2010.

Tier I

It is assumed that 25% of the emission reductions will occur by January 1, 1994 through the programming and implementation of the constrained RMP projects.

Tier II

It is assumed that 75% of the emission reductions will occur between 1994 and 2010.

INDICATORS

Tier I

The numbers below are the daily changes in transportation activity expected for the implementation of Freeway Capacity Enhancements.

| | 1994 | Baseline |
|---------------------|-----------|----------|
| Veh.-trip reduction | 0 | 0% |
| VMT reduction | 3,886,750 | 1% |
| VHT reduction | 613,750 | 2.75% |

Tier II

The numbers below are the daily change in transportation activity expected for the implementation of Freeway Capacity Enhancements by 2010.

| | 2010 | Baseline |
|---------------------|------------|----------|
| Veh.-trip reduction | 0 | 0% |
| VMT reduction | 11,660,250 | 3% |
| VHT reduction | 1,841,250 | 8.25% |

PRIMARY BENEFIT

Tier I

ROG will be reduced by 4.4 tons/day.

Tier II

ROG will be reduced by 13.3 tons/day.

REFERENCES

1979 Air Quality Management Plan; A Preliminary Draft of Strategies Towards the Development of the Regional Mobility Plan, SCAG, February, 1988; Draft Financial Analysis of Alternative Strategies for the Regional Mobility Plan, SCAG, February, 1988.

AQMP COMMITMENT SCHEDULE

MEASURE : 13. FREEWAY CAPACITY ENHANCEMENTS

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|--|--|-------------------|-------------------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | <div>EXISTING LOCAL GOVERNMENT OPTIONS</div> | <ul style="list-style-type: none"> o GENERAL PLANS o RHNA | | | |
| FACILITATE | | <ul style="list-style-type: none"> o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | <ul style="list-style-type: none"> o ZONING o BUS. LICENSES | | | |
| ASSIST | | <ul style="list-style-type: none"> o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### ### ### | ### ### ### | |
| AGREEMENTS | <div>COOPERATIVE PARTNERSHIPS FORGED</div> | <ul style="list-style-type: none"> o MOU'S & JPA's | | | |
| LEGISLATION | | <ul style="list-style-type: none"> o INCREASE \$ o NEW AUTHORITIES | ### | ### | |
| REGIONAL REGULATION | <div>TOP DOWN CONTROL</div> | <ul style="list-style-type: none"> o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Caltrans, Transportation Commissions, and SCAG program and implement the Constrained Freeway Element of the adopted Regional Mobility Plan. (This project list is based on funding available during the next 20 years.)
- o Caltrans, Transportation Commissions, and SCAG secure funding for the Unconstrained Freeway Element of the adopted Regional Mobility Plan. (Tier II)

14. RAILROAD ELECTRIFICATION

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SUMMARY

SOURCE CATEGORY: Trains

CONTROL METHODS: Tier I

- o SCAG and SCAQMD to conduct from 1991-1992 detailed feasibility study of railroad electrification.

- o Railroads to conduct and obtain engineering studies, environmental clearance and financing for pilot project from 1993-1995.

Tier II

- o Railroads to construct pilot project from 1996-1998.

- o Railroads to expand project to other lines from 1999-2010.

IMPLEMENTING
AGENCIES:

Railroads, SCAG, SCAQMD

IMPLEMENTATION
ASSUMPTIONS:

Electrification of 80% of rail lines in the basin

Tier I

None of the emission reductions will occur by January 1, 1994.

Tier II

100% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

ROG will not be reduced by 1994.

Tier II

8.9 Tons/Day ROG reduction by 2010.

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DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Electrification of high traffic density railroad lines could significantly reduce emissions from railroad operations in the South Coast Air Basin, provided the added power generation does not contribute added emissions. All railroad locomotives currently in operation in the basin are diesel electric. A large diesel engine drives a generator which provides electricity for the operation of traction motors mounted on the locomotive wheels providing propulsion.

There are three Class I railroads operating in the basin: the Union Pacific Railroad, the Southern Pacific Transportation Company, and the Atchison, Topeka and Santa Fe Railway. There are also two Class II railroads that provide local switching service: the Los Angeles Junction Railway which operates in the cities of Vernon and Maywood, and the Harbor Belt Line, which operates in the Port of Los Angeles. In addition to these freight railroad companies, Amtrak, the regional line haul passenger operator, provides service over the tracks of the Class I railroads.

The Class I railroads operate both line haul and local switching operations in the basin. Line haul service consists of long freight trains operating between major classification and intermodal terminals. Local switching operations involve shorter trains serving customers on both branch lines and main lines. The predominate mode of operation in the basin, however, is line haul.

All rail transit projects currently being built in the basin are electrified, using overhead/third rail distribution systems.

Electrification has been used extensively throughout the world for all types of rail operations. Europe and Japan operate most major line line haul operations under electric power with no emissions.

In the United States, railroad electrification began in 1895, when the Baltimore and Ohio Railroad began operating three 1400 horsepower locomotives on a four-mile line through a series of tunnels in Baltimore. These units were used to shuttle trains with steam locomotives through the tunnels. Until 1910, smoke abatement from steam locomotives continued to be the major advantage of electrification.

Between 1910 and 1925 the New Haven and Pennsylvania Railroads developed electrified systems in the congested, high-density territory adjacent to the New York metropolitan area.

Over the last 30 years, however, diesel-electric operations have replaced all electrified operations in freight service, except for a few lines serving electric utilities.

Regulatory History

Section 40702 of the Health and Safety Code specifies that no order, rule, or regulation of any district shall specify the design of equipment, type of construction, or particular method to be used in reducing the release of air contaminants from railroad locomotives. The District could appeal to the Legislature for a change in the law, or the District could issue a rule based on the level of emissions rather than a specific propulsion technology.

Despite the state code, the 1979 and 1982 AQMP's called for rail electrification. The 1979 Plan contained H11 Electrify Railroad Switching Yards. The measure called for replacing existing diesel railroad operations, if appropriate, with overhead electric systems. Electrification and/or other equivalent measures would be applied at the optimal scale of operation to achieve equivalent emission reductions.

The 1982 Plan Revision in M8 Electrification of Railroad Line Haul Operations called for reduction of emissions associated with railroad line haul operations by replacing existing diesel locomotive operations with electrified systems.

Assembly Bill 234 (Leonard) added Section 25310.1 to the Public Resources Code which requires the State Air Resources Board to undertake a joint study with the California railroad industry of the current technology available to reduce locomotive emissions. Section 5 creates the Locomotive Emission Advisory Committee to "study existing and proposed technologies that are economically feasible and practical for the industry to implement in order to contribute to a reduction of railroad locomotive emissions". The committee is to report back with recommendations to the Governor and the Legislature not later than July 1, 1989.

CONTROL METHODS

SCAG and SCAQMD would conduct from 1991-1992 a detailed feasibility study of electrification of rail lines, including cost estimates, engineering issues, institutional arrangements, impacts and political acceptability. The study would identify the most suitable rail line for the pilot project.

The railroads would conduct engineering studies, obtain the environmental clearance and financing for the pilot project from 1993-1995. The railroads would construct the pilot project from 1996-1998 and expand the project to other lines from 1999-2010.

The proposed method of control is to install overhead and/or third rail electrical distribution systems and use electric power for propulsion of locomotives along the major line haul routes into and through the basin. The use of electric power would involve the purchase of new electric locomotives or the retrofit of existing diesel electric locomotives for dual use.

Within the South Coast Air Basin, the primary lines for electrification would be the high density main lines plus the proposed consolidated rail corridor to the Ports of Los Angeles and Long Beach. Terminal, switching, and branch line operations would continue to use diesel-electric locomotives. If railroad traffic on the main lines east of Los Angeles were consolidated onto one or two main lines the cost of electrification per ton or ton-mile could be reduced.

Major lines that could be electrified would be the Southern Pacific San Pedro Branch (the proposed consolidated railroad corridor to the ports); the Santa Fe main line from Los Angeles through Fullerton, Riverside, San Bernardino to Barstow; the Union Pacific main line from Los Angeles through Riverside to Yermo; the Southern Pacific main line from Los Angeles through Colton to Indio. The Union Pacific shares the same corridor with the Santa Fe through downtown Riverside and the Union Pacific has traffic rights over the Santa Fe line over the Cajon Pass. An additional main line that could be electrified would be the Southern Pacific coast line from Los Angeles to Oxnard.

The feasibility study would be required to generate baseline train and electricity emissions data. Upon implementation, the railroads would be required to monitor the progress and effectiveness of the projects and report the the results to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

The capital costs of electrification pose a significant obstacle to the implementation of this control measure in the Los Angeles basin, even though substantial savings in operating costs can be projected over the long run. This control measure could pay for itself within twenty years through savings in operating costs. If the density of traffic is high, however, capital costs per unit of traffic can be reduced. In general, full electrification can be more easily justified from an economic standpoint when the traffic is dense and when the traffic is evenly distributed throughout the day and year.

An additional obstacle to implementation is that any railroad might prefer to electrify entire lines from end to end (for example, the Southern Pacific line from Los Angeles to El Paso), and not just the segments of the lines that are in the South Coast Air Basin.

One possible method of reducing the overall cost of electrification would be to consolidate main line traffic as much as possible. For example, it might be possible to reroute Union Pacific trains onto the SP mainline between the City of Industry and Colton. This would provide the UP with a more direct route to the Cajon Pass and would eliminate the need to electrify that portion of the Union Pacific line from Industry to Riverside. The feasibility of adding additional trains to the SP main line, however, would have to be investigated. The institutional feasibility of this type of consolidation, however, is low. The Santa Fe Second Subdivision (from Los Angeles through Pasadena to San Bernardino) would not be a candidate for electrification because the Santa Fe has

proposed to sell it and reroute traffic to the Third Subdivision through Fullerton and Riverside.

Of course the cost to electrify could be significantly reduced if all main line traffic were consolidated onto one of the main lines, such as the Southern Pacific line from Los Angeles to Colton, which is the most direct route to the San Bernardino area. However, the savings in electrification would be offset by costs for additional track capacity and grade separations and other mitigations along this corridor. Again, the institutional feasibility of a major consolidation of this nature is considered very low.

EMISSIONS REDUCTION

Electrified railroad operations in the Basin would eliminate the need for line haul diesel operations entirely for the electrified main lines except in rare emergencies. Electrification would reduce line haul emissions in the Basin by 75% to 90%, as long as new power needed is generated outside the basin.

CONTROL COST

Initial capital costs would be substantial. Accurate estimates of costs are impossible without a detailed feasibility study for the Los Angeles area.

OTHER IMPACTS

Electrification would reduce railroad operating costs, and reduce reliance on oil supplies. Fleet requirements should be reduced, in that a 6,000 horsepower electric locomotive can do twice the work of a 3,000 horse-power diesel electric locomotive. The capital cost per horsepower is break-even with diesel electric locomotives. Electric locomotives have greater reliability (mean time between failures is greater). Electric locomotives have longer lives (30-40 years) than diesel electrics (15-20 years).

Electrification would also require engine changes at the interchange points between electric territory and diesel territory. However, it is likely that these interchange points would be located at rail yards where crew changes already take place (e.g., Barstow).

LEGISLATIVE\RESEARCH NEEDS

A detailed feasibility study of railroad electrification in the South Coast Air Basin should be conducted. The biggest obstacle to electrification is the large capital cost. Funding for electrification could come from the sale of revenue bonds, but assistance from state or federal sources would certainly facilitate implementation of this control measure.

IMPLEMENTATION ASSUMPTIONS

This control measure assumes the electrification of 80 percent of railroads in the basin by 2010.

Tier I

It is assumed that none of the emission reductions will occur by January 1, 1994.

Tier II

It is assumed that 100% of the emission reductions will occur between 1994 and 2010.

INDICATORS

Tier I

No reduction.

Tier II

Electrification of rail lines in the basin would reduce line haul emissions by 80 percent by 2010.

PRIMARY BENEFIT

Tier I

ROG will be not be reduced.

Tier II

ROG will be reduced by 8.9 tons/day.

REFERENCES

Simmons-Boardman, Car and Locomotive Cyclopedia, 1984, pp. 613-617; H. Cooper, Jr. and R. Buck, "Energy and Economic Benefits of National Railroad Electrification in the United states" In R.A. Fazzolare and C.B. Smith, Beyond the Energy Crisis: Opportunity and Challenge, Pergamon Press, 1981, pp. 1991-2002; Alice E. Kidder, Railroad Electrification Activity, A Summary Report: 1980-1981, prepared for the U.S. Department of Transportation, Federal Railroad Administration, April, 1982.

AQMP COMMITMENT SCHEDULE

MEASURE : 14. RAILROAD ELECTRIFICATION

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|---|------------|------------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | <div> <div>↑</div> <div>EXISTING LOCAL GOVERNMENT OPTIONS</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o GENERAL PLANS o RHNA | | ### | |
| FACILITATE | | <ul style="list-style-type: none"> o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | <ul style="list-style-type: none"> o ZONING o BUS. LICENSES | | | |
| ASSIST | | <ul style="list-style-type: none"> o ACTIONS AS AN. EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | | ### | |
| AGREEMENTS | <div> <div>↑</div> <div>COOPERATIVE PARTNERSHIPS FORGED</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o MOU'S & JPA's | | ### | |
| LEGISLATION | | <ul style="list-style-type: none"> o INCREASE \$ o NEW AUTHORITIES | ### ### | ### ### | |
| REGIONAL REGULATION | <div> <div>↓</div> <div>TOP DOWN CONTROL</div> </div> | <ul style="list-style-type: none"> o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Detailed feasibility study by SCAG and SCAQMD of railroad electrification conducted from 1991-1992.
- o Railroads to obtain financing for pilot project from 1993-1995.

15. ELECTRIC VEHICLES

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SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Truck, Heavy Truck.

CONTROL METHODS: Tier I

- o Local governments and SCAQMD support tax incentive and research and development legislation between 1989 and 1990.
- o SCAQMD support demonstration of electric vehicles by 1990.
- o Commitments from utilities, vehicle manufacturers, and governmental agencies to invest in public/private electric vehicle sale/back and lease/back programs between 1989-90.
- o Local governments commit by 1994 to a phase-in penetration of public fleets by electric vehicles: 10% by 2000, 20% by 2010.
- o SCAQMD expand its clean fuels program to provide financial backing for battery research between 1989-92.

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

State, County, Local Governments, SCAQMD.

IMPLEMENTATION
ASSUMPTIONS:

A reduction in vehicle fuel emissions as a result of 240,000 cars, 292,000 vans, and 10,000 heavy duty trucks utilizing electric power.

Tier I

None of the projected emission reductions will occur by January 1, 1994.

Tier II

100% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

No benefit by 1994.

Tier II

18.16 tons/day ROG reduction by 2010.

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DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background:

Battery electric vehicles, especially vans, are being used as service-fleet vehicles in many countries (USA, Canada, England, and Japan). Since 1985, GM Griffon vans (a one-ton, lead-acid battery electric van) have been used in the service fleets of eleven electric utilities and eleven other companies in North America.

The Electric Power Research Institute (EPRI) and the Electric Vehicle Development Corporation (EVDC) with the automobile industry, the federal government, and electric utilities all over the the country, are currently working to speed the introduction of production electric vehicles. Primary efforts include: (a) battery and electric component R & D, (2) prototype development and testing of the GM G-Van, the Chrysler TEVan, and "Advanced" electric vans.

Current Griffon electric (lead-acid battery pack) technology offers 60-mile range between charges; up to 20 additional miles with a mid-day charge of 4 hours. Cumulative U.S. Griffon miles driven by 8 utilities since September, 1985 are 320,257; kWh used are 290,447; and kWh /mi performance is 0.91.

The gradual entry of electric vehicles into fleet markets seems to be ideal because service industry needs include vehicles which can: (1) be parked in central service area at night, (2) have life-cycle costs which are competitive with internal combustion engine vans, and (3) exhibit a daily driving range (of a large portion of fleet vans which provides a "niche" market) commensurate with the performance capabilities of conventional electric vans.

With GM, Chrysler, and Ford entering into the prototype building and testing of battery electric vans, it appears that the opportunity to reduce vehicle emissions for this portion of the light-duty vehicle population is excellent.

Regulatory History

The 1979 Plan contained which called for H60 Electric Vehicles, replacing a portion of conventional autos with 100,000 electric or hybrid vehicles.

The 1982 Plan Revision called for M4 Electric Vehicles. Electric vehicles

would be developed and marketed as short distance commuter, town, and/or delivery vehicles. Governmental promotion could take the form of a tax incentive for the purchase of an electric vehicle, either as a sales tax rebate or as a credit in the payment of state and/or federal income tax. In addition, electric utilities should be encouraged to institute a time-of-day pricing policy for recharging of electric vehicles during off-peak hours.

CONTROL METHODS

During the early stages of reintroduction of battery electric vehicles, a balanced approach of providing incentives and specific objective targets for the service vehicle fleet operators to meet is envisioned. As products of proven performance and competitive price emerge, the following strategies can be employed to increase the utilization of electric vehicles in the South Coast Air Basin:

- o The SCAQMD should provide backing for:

- legislation that provides tax incentives for use and ownership of electric vehicles (1989-1990);

- legislation that provides opportunities for Research and Development of electric vehicles (including the SCAQMD's Clean Fuels Vehicle Program) (1989);

- demonstrations of electric vehicles in both fleet service, and private passenger use (1990); and

- commitments from utilities, vehicle manufacturers, and governmental agencies to invest in public/private electric vehicle sale/back and lease-back user programs (1989-1990).

- o Local governments should commit by 1994 to a phased-in penetration of public fleets by electric vehicles: 10% by 2000, 20% by 2010.

- o The SCAQMD should expand its Clean Fuels Program to provide financial backing for battery research (1989-1992).

All of the implementing agencies would be required to generate baseline electric vehicle VMT and emissions data, and program updates. Upon implementation, the agencies would be required to monitor the progress and effectiveness of the programs and report the results and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

The primary issues which affect the implementation of these methods of control include: vehicle range and cost, public acceptability, vehicle availability, and low cost of gasoline.

OTHER IMPACTS

Positive Impacts:

- o Eliminates vehicle VMT-related tail pipe emissions.
- o Eliminates idling emissions related to congestion.
- o Lower operating, insurance, and maintenance costs.
- o Helps electric utilities to balance off-peak electric demand loads.

Negative Impacts:

- o May increase utility electric power generation emissions.
- o Increases initial vehicle purchases costs.

LEGISLATIVE/RESEARCH NEEDS

Legislation is needed that provides: (1) financial opportunities for research, development, and demonstration (R,D & D) of electric vehicles, and (2) tax incentives for use and ownership of electric vehicles.

IMPLEMENTATION ASSUMPTIONS

This measure assumes that 240,000 cars (3.36%), 292,000 vans (12%), and 10,000 Heavy Duty Trucks (2.4%) will utilize electric power by 2010. The impact of electrical power generation in the South Coast Air Basin is not considered in the assumptions.

Tier I

This measure assumes that none of the emission reductions will occur by January 1, 1994. However, it is assumed that there will be tax incentive legislation by 1990; legislation that provides research and development opportunities by 1989; demonstrations by 1990; commitments from utilities vehicle manufacturers, and governmental agencies to participate in user programs by 1990, and the SCAQMD will expand its Clean Fuels Program.

Tier II

This measure assumes 100% of the emission reductions will occur between 1994 and 2010 through local governments phase in of public fleets by electric vehicles: 10% by 2000 and 20% by 2010.

INDICATORS

Tier II

Based on the implementation assumptions, vehicle exhaust emissions will be reduced.

PRIMARY BENEFIT

Tier I

ROG will not be reduced.

Tier II

ROG will be reduced by 18.16 tons/day.

REFERENCES

Electric Power Research Institute. February 1988. Building the Future: EPRI's Vehicle Development Activities.






General Motors. February 1988. Electric G-Van Pamphlet.

Chrysler Corporation. February 1988. The Chrysler TEVan Program: Program Review.

AQMP COMMITMENT SCHEDULE

MEASURE : 15. ELECTRIC VEHICLES

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|-------------------|------------|------------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### | ### | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### ### ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### ### | ### ### | ### ### |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | ### | ### |

TIER I ACTIONS SUMMARIZED:

- o Local governments and SCAQMD to support tax incentives legislation.
- o The SCAQMD to support demonstration of electric vehicles.
- o Commitments from utilities, vehicle manufacturers, and governmental agencies to invest in public/private electric vehicle sale/back and lease/back programs.

16. HIGHWAY ELECTRIFICATION & AUTOMATION

SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Truck, Heavy Duty Truck

CONTROL METHODS: The control methods will depend on how specific technology applications evolve. Refer to Legislation needs for a list of actions.

IMPLEMENTING AGENCIES: Caltrans and SCAQMD.

IMPLEMENTATION ASSUMPTIONS: No assumptions have been made.

PRIMARY BENEFIT: ROG emission reductions have not been identified.

DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background:

The technology patents to make roadway-powered electric vehicles (RPEV) a reality have existed nearly 100 years. Current RPEV development uses an inductive coupling technology, and embodies a distributed energy concept. This comprises a continuous buried element in a street or highway, which creates an electro-magnetic field; this in turn is used to efficiently transfer energy across an air gap to an element onboard the vehicle, where the energy is stored in batteries and electrical propulsion is used.

Public sector rapid and light rail electric transportation systems have used several elements of vehicle automation and advanced vehicle/guideway communication systems to enhance overall system performance. Current research on RPEV system components suggests that individual vehicles can be "automated" and enjoy corresponding improvements in performance. Automation elements would include speed control, signal preemption, vehicle spacing, braking, merging and passing maneuvers, obstacle detection, electronic route guidance, etc.

If overall highway speeds can be improved through application of automation features, then emission reductions can be achieved through a percentage reduction of congestion delays.

The Caltrans Program for Advanced Technology (PATH) Program is developing both RPEV and vehicle automation technologies at Richmond Field Station in Berkeley, California. The PATH Program offers the potential of an automated, electric automobile that is practical and feasible for the first time, as it overcomes the inherent disadvantages of battery-only vehicles of limited range and performance. These technologies are however, still in

their infancy, and significant research, development and demonstration needs to be accomplished before public sector applications can be made.

Regulatory History:

There was no reference to HE and A in the 1979 AQMP. The 1982 Plan Revision contained a Long-Range Control Strategy, Areawide Highway Electrification. This system would retrofit urban and interstate freeways with an electric induction system for recharging electric vehicles while they are traveling over the highway network. The system could function in two ways. First the electricity could be used to charge the batteries carried by electric cars. The recharged batteries could then be used for the vehicle operation of the electrified roadway. The second way the system could be used would be for dual-powered vehicles - gasoline and electric - to use electric power systems while on the electrified highways and gasoline power when away from the system.

METHOD OF CONTROL

As a further study measure, no methods of control are suggested. Further development and testing of these technologies is needed.

OTHER IMPACTS

RPEV and vehicle automation technologies could improve traffic flow and reduce air pollution. However, RPEV and vehicle automation may increase the demand for electric power generation and consequently could increase power plant emissions.

LEGISLATION/RESEARCH NEEDS

- o Legislation is required that supports the Research, Development, Testing and Demonstration of advanced electric technologies (ie. roadway powered electric vehicles (RPEV) and/or other clean fueled vehicles which exhibit elements of vehicle automation) through the Caltrans PATH program (1989).
- o Specific research and analysis of advanced electric technologies (ie. RPEV), including other clean fueled vehicles, as well as demonstrations in the SCAB which include both low-speed, local circulation and higher speed, freeway applications, with elements of vehicle automation, are needed (1992).
- o Specific studies to identify the potential of RPEV and vehicle automation technologies to help improve traffic flow and to reduce air pollution are needed (1989 through 1991).

IMPLEMENTATION ASSUMPTIONS

Implementation of the highway electrification measure is limited to research and development, and demonstration projects. No assumptions have been made regarding commercial applications.

INDICATORS

Highway electrification is not expected to be commercialized by the year 2010.

REFERENCES






SCAG. December 1984. Highway Electrification and Automation: Planning Implications for Southern California.

AQMP COMMITMENT SCHEDULE

MEASURE : 16. HIGHWAY ELECTRIFICATION AND

AUTOMATION

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|-------------------|------------|------------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS  | o GENERAL PLANS o RHNA | | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### ### ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED  | o MOU'S & JPA'S | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### ### | ### ### | ### ### |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | ### | ### | ### |

TIER I ACTIONS SUMMARIZED:

- o Legislation to support research, development, testing, and demonstration.
- o Research and analysis of advanced electric technologies.
- o Studies to identify potential of Roadway Powered Electric Vehicles and highway automation.

17. HIGH SPEED RAIL

SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Truck, Trains

CONTROL METHODS: Tier I

- o SCAG, local agencies and Caltrans to initiate by January 1, 1990, a study to devise agreement to build, fund, and operate a rail system.

- o SCAG, local agencies and Caltrans undertake by January 1, 1990, a study to identify new routes and viable funding instruments.

Tier II

- o Implementation by 2010 of a high speed rail line between Los Angeles and San Francisco.

IMPLEMENTING
AGENCIES:

SCAG, local agencies and Caltrans

IMPLEMENTATION
ASSUMPTIONS:

High Speed Rail System built to substitute for 20 Million Air Passenger demand.

Tier I

None of the emission reductions will occur by January 1, 1994.

Tier II

100% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

ROG will not be reduced by 1994.

Tier II

2.23 tons/day of ROG reduction by 2010.

Background

The intent of high speed trains is to absorb significant levels of air traffic congestion within inter-regional corridors such as Los Angeles to San Francisco, Los Angeles to San Diego, and Los Angeles to Las Vegas. To the extent that this goal is achieved, train travel could facilitate a significant reduction in airline emissions.

A number of previous studies have examined high speed ground transportation projects serving the Southern California area. Most of these studies found the concept feasible, but projects were not implemented due to lack of available technology, and/or financial considerations.

During the late 1970's, a national study, entitled "Emerging Rail Corridors," identified the Los Angeles-San Francisco Bay Area Corridor as the busiest commercial domestic air travel corridor in the United States. Air travel between five Southern California airports and three Bay Area airports accounts for 28 percent of all domestic air travel originating or terminating in the SCAG area and represents more than 47 percent of all short haul air travel serving the region.

That same study identified the Los Angeles-San Diego corridor as the most attractive corridor for upgraded rail service in the United States due to the high density of auto travel.

The City of Las Vegas conducted several preliminary studies that suggested a magnetic levitation (Maglev) transportation system would be technically and economically feasible to service the Los Angeles-Las Vegas corridor.

Regulatory History

The 1982 Air Quality Management Plan Revision identified high speed trains as a long-range control measure to substitute for 75 percent of all air trips of 400 miles or less originating from SCAG area airports. The diversion of approximately 500,000 annual vehicle trips to other modes for inter-regional travel to selected destinations i.e. San Diego, San Francisco, and Sacramento represents an approximate 30 percent reduction in travel times for rail, bus, and air transport. This was to be achieved through increased numbers of trains, increased operating speeds, and more express trips scheduled.

CONTROL METHODS

The High Speed Rail Commission would initiate by January 1, 1990, a study to devise agreements to build, fund, and operate rail system. The Commission would also undertake by January 1, 1990, a study to identify new routes and viable funding instruments. The study would also define appropriate regulatory guidelines. The studies would culminate in a comprehensive implementation plan for high speed rail service.

A high speed rail line would be implemented between Los Angeles and San Francisco by 2010 utilizing, as an example, magnetic levitation technology (Maglev). The system converts an electrical energy system into motion and is able to produce high speeds ranging from 250 mph to 300 mph.

The study would be required to generate baseline auto, truck, train and aircraft emissions data. Upon implementation, the High Speed train authority would be required to monitor the progress and effectiveness of the project and report the results to SCAG for incorporation into the RFP.

IMPLEMENTATION ISSUES

The U.S. Government has traditionally turned a deaf ear to any discussion of federal support for high speed trains. The questions of who should build, fund and operate the system need to be aggressively researched.

OTHER IMPACTS

High speed rail projects could stimulate new development and jobs in areas near stations.

Some problems with noise and vibration, as well as view obstruction along routes could result from the implementation of this measure. Further, short-term construction impacts could present a negative impact on nearby residential communities.

LEGISLATIVE/RESEARCH NEEDS

Feasibility studies to identify new routes and viable funding instruments for capital development and operating costs are needed. Creation of an operating authority and appropriate regulatory guidelines should be studied; relevant environmental issues should be identified.

IMPLEMENTATION ASSUMPTIONS

Only the Los Angeles-San Francisco corridor is assumed in the measure's projected emission reductions. The system would handle the equivalent of 20 MAP. Unmet aviation demand will be served by the high speed (250-300 mph) ground link.

Tier I

It is assumed that none of the projected emission reductions will occur by January 1, 1994.

Tier II

It is assumed that 100% of the emission reductions will occur between 1994 and 2010.

INDICATORS

Tier I

No Reduction.

Tier II

Ground traffic emissions would be reduced by 50%.

PRIMARY BENEFIT

Tier I

ROG will not be reduced.

Tier II

ROG will be reduced by 2.23 tons/day.

REFERENCES

"The Great Train Race," Railway Age, January, 1984; "Super Speed Ground Transportation System, Las Vegas/Southern California Corridor", SCAG, March, 1987; Draft Air Quality Management Plan, SCAG, SCAQMD, October, 1978.

AQMP COMMITMENT SCHEDULE

MEASURE : 17. HIGH SPEED RAIL

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|------------|------------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | <div> <div>↑</div> <div>EXISTING LOCAL GOVERNMENT OPTIONS</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | <ul style="list-style-type: none"> o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | <ul style="list-style-type: none"> o ZONING o BUS. LICENSES | | | |
| ASSIST | | <ul style="list-style-type: none"> o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | | |
| AGREEMENTS | <div> <div>↑</div> <div>COOPERATIVE PARTNERSHIPS FORGED</div> <div>↓</div> </div> | <ul style="list-style-type: none"> o MOU'S & JPA's | ### | | |
| LEGISLATION | | <ul style="list-style-type: none"> o INCREASE \$ o NEW AUTHORITIES | ### ### | ### ### | |
| REGIONAL REGULATION | <div> <div>↓</div> <div>TOP DOWN CONTROL</div> </div> | <ul style="list-style-type: none"> o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o SCAG, local agencies and Caltrans initiate study by January 1, 1990 to devise agreements to build, fund, and operate rail system.
- o SCAG, local agencies and Caltrans undertake feasibility study by January 1, 1990 to identify new routes and viable funding instruments.

III. LAND-USE CONTROL MEASURE

18. GROWTH MANAGEMENT

SUMMARY

SOURCE CATEGORY: Light Duty Auto, Light and Medium Duty Truck, Heavy Duty Truck

CONTROL METHODS: Tier I

- o Local Governments amend general plans by July 1, 1990, incorporating procedures to attain job/housing balance targets consistent with the Growth Management Plan, when adopted.
- o Local Governments adopt ordinances by July 1, 1990, to attain job/housing balance targets consistent with the Growth Management Plan when adopted.
- o Local Governments develop interregional agreements by January 1, 1992, for the attainment of job housing balance targets set for Tier II (1994-1999) of the implementation process.

Tier II

- o SCAG to assess effectiveness of local programs by January 1, 1994, and proceed, if necessary to recommend further actions to be implemented through SCAQMD, RWQCB's and HCB.

IMPLEMENTING

AGENCIES: Local Jurisdictions, SCAG, SCAQMD, RWQCB's, HCB, Sanitation District

IMPLEMENTATION

ASSUMPTIONS: Redistribution of 5 percent population and housing growth (285,000 pop., 123,000 HU); and 9 percent jobs growth (300,000)

Tier I

4% of the emission reductions will occur by January 1, 1994.

Tier II

96% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

1.9 tons/day ROG reduction by 1994.

Tier II

44.6 tons/day ROG reduction by 2010.

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DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Mobile source emissions account for 60% of the air pollution emissions in the South Coast Air Basin. Projected growth in population, housing and employment, as well as the unbalanced distribution of housing and jobs within the region will contribute to an increase in transportation demand. More people will have to travel long distances from their residences in areas such as San Bernardino and Riverside Counties to their place of work in Los Angeles and Orange Counties. The number of person trips will increase by the year 2010 contributing to further deterioration of regional air quality.

Regulatory History

There is no reference to growth management in the 1979 AQMP. The 1982 Plan Revision contained three strategies. 01 Mixed Land-Use Balanced Development encouraged the mixing of land uses and the balancing of jobs with housing at the neighborhood and community scales (up to four square miles). Residents would have more employment and shopping opportunities close to home, and reduced trip lengths would encourage walking, bicycling, and transit use. Implementation could be accomplished through zoning, density bonuses, specific plans, HUD Block Grants, PUDs, Community Plans, infilling, reduced developer exactions, and fast-track permit processing.

Two long range strategies were addressed. Less Growth in the SCAB claimed that it is possible to control the total growth in the air basin than currently forecasted leading to reduced pollution levels.

Redirect Population Growth to Other Southern California Areas called for reducing the amount of growth in the basin by redirecting part of the anticipated growth to other parts of Southern California. One way to accomplish this would be to encourage growth in the desert areas surrounding the Los Angeles basin by providing new infrastructure in these areas and various incentives for business to locate there.

Growth management is already in place in many parts the region. Many of the measures proposed in the Growth Management Plan are a restructuring of measures currently implemented to incorporate a regional job/housing balance.

CONTROL METHODS

The Growth Management Plan provides a common framework for the development and integration of the major SCAG plans (Growth Management, Mobility, Air Quality, Hazardous Waste, and the Regional Housing Needs Assessment). Some of the major objectives of the Growth Management Plan are to develop strategies to guide job, housing and infrastructure development in a way least disruptive of the environment and regional resources, to expand the region's fiscal abilities to maintain and expand the necessary infrastructure, and to conserve open space and the natural environment.

The GMA-4 Modified Job/Housing Balance distribution of population, housing, and employment by subregion for the year 2010 as approved by the Executive Committee is the preferred growth management alternative. The development of this preferred alternative involved two steps: (1) developing a new trend projection reflecting the most recent data available; and (2) adjusting the subregional housing and employment growth in order to incorporate the job/housing balance policy. The trend projection was the result of an analysis of housing and employment trends from 1970 to 1988, giving more weight to the most recent years (1984-88). A standard procedure and system was developed to incorporate the job/housing balance policy into the Trend projection.

The Growth Management Plan Implementation Process involves a series of steps for the application of job/housing balance measures and a timetable for progress assessment. At each step, the roles and responsibilities of existing agencies in the enactment of the major policies of the Growth Management Plan (job/housing balance and preservation of open space) are spelled out.

During the first tier (5 years) of the implementation process local governments have the responsibility for implementing job/housing balance measures. With the assistance of SCAG and Subregional Entities, if needed, local governments would adopt by July 1, 1990, ordinances to attain job/housing balance targets and amend general plans to incorporate the policy to attain subregional targets consistent with the Growth Management Plan when adopted. Local governments and the Sanitation Districts would develop by January 1, 1992, interregional agreements to attain the job/housing balance targets consistent with adopted Growth Management Plan.

By January 1, 1994, SCAG would assess the effectiveness of the local programs, and if necessary recommend further action.

The Measures to be implemented by Local Jurisdictions and/or Subregional Entities are as follows:

- o Developer fees, exacted from public and private projects which go beyond growth targets and accentuate the job/housing imbalance in a subregion, can be used to either defray the external costs associated with the development, or help pay for needed infrastructure. Exacted fees can also be used to compensate depressed areas for any potential loss of

revenue. The exaction/mitigations could also be in the form of providing the jobs or housing needed to overcome the development's imbalance.

- o Establish regional and local priorities for building the infrastructure needed to support job/housing balance.
- o Locate new major regional and local public facilities that are job-inducing in job-poor subregions and housing-inducing in housing-poor subregions.
- o Target basic industries. This is a tool which can be used by job-poor localities to identify growing industries and attract them by providing the proper incentives, such as tailoring their economic activities to the industries' requirements.
- o Develop human resources through education and training of workers so businesses can rely on an appropriate labor force if they want to locate in certain areas.
- o Encourage housing development in job-rich subregions in accordance with allocations in the Regional Housing Needs Assessment by providing developers with additional incentives.
- o Eliminate housing construction limitations in job-rich areas.
- o Link the transportation demand management measures to the job/housing balance measures.
- o Propose changes to state redevelopment laws to make it easier to implement the job/housing balance policy.

If, through the monitoring and review process performed by SCAG by January 1, 1994, it is assessed that job/housing balance targets at the subregional level will not be met by 1994, then Regional or State Authorities can consider implementing additional Regulatory Measures. The regulatory measures are intended to supplement, not supersede, the local government measures.

Local jurisdictions and subregional entities can choose from a variety of other job/housing balance implementation measures as outlined in Appendix 2 of the Growth Management Plan.

The Measures to be implemented by Regional and/or State Authorities are as follows:

- o Implementation of job/housing balance policies by SCAQMD through enforcement of New Source Review Rule and Indirect Source Regulations.
- o Enforcement of the National Pollutant Discharge Elimination System by the Regional Water Quality Control Boards.

- o Implementation of job/housing balance policy through the Regional Transportation Improvement Program.
- o Implementation of the job/housing balance policy through enforcement of the Regional Housing Needs Assessment by State Housing and Community Development Department.

IMPLEMENTATION ISSUES

Measures to implement job/housing balance can significantly improve mobility patterns, and help attain emission reductions and improvement of the region's air quality. However, in successfully achieving this balance, care will have to be paid to the following issues, so that new problems won't be created:

- o Provision of adequate investment and renewal in aging or depressed areas that also happen to be job-rich, and design of a system to assure that the needs of the area are met.
- o Avoid a negative impact on economic development in the region which could result from restricting employment growth in certain areas (for example, ports or airports).
- o Decentralization or concentration of employment as the economy becomes more "fragmented" (with a larger number of small firms) and implications this has upon local governments' ability to affect these decisions.
- o Redirecting only enough housing growth in already built-up areas to alleviate the problems associated with in-commuting, and only to those areas where infrastructures are in place to accommodate the added housing units.
- o Achieving a balance by subregion of the type of jobs with the price of housing.
- o Accommodation of fair share of low and moderate income housing in areas where job growth will be redirected. A coordinated regional growth management system that incorporates the concept of regional fair share reduces the potential for imbalances of social groups and governmental service costs.
- o Avoid creation of a system to achieve job/housing balance which is punitive, unconstitutional, or excessively burdensome.

OTHER IMPACTS

In addition to the transportation and air quality benefits, job/housing balance would reduce the cost of congestion by increasing worker productivity, reduce disparities in the tax burdens between cities and counties and provide residents of Southern California with "balanced

communities"--areas where one can both live and work.

LEGISLATIVE NEEDS

- o Seek changes to local, state environmental regulations in such a way as to support job/housing balance. For example, the New Source Review Rule of the South Coast Air Quality Management District should be revised to take into account air quality benefits from job/housing balance objectives.
- o The revision of local police powers so as to encourage regional job/housing balance could require new state law.
- o Require consistency between future redevelopment activities and regional job/housing balance.
- o Fund infrastructure projects only to the extent that they contribute to attainment of job/housing balance targets.
- o Raise the current limits on Industrial and Housing Development Bonds.
- o Mandate elimination of housing limitations (other than those for public health and safety) that are inconsistent with requirements of the Regional Housing Needs Assessment.

IMPLEMENTATION ASSUMPTIONS

This control measure assumes 9 percent of jobs (300,000) and 5 percent of population and housing (123,000 housing units) are redistributed in the region.

Tier I

It is assumed that 4% of the emission reductions will occur by January 1, 1994 through the adoption by July 1, 1990, of local government ordinances and general plan amendments and through the development by January 1, 1992 of interregional agreements to attain the job/housing balance targets consistent with the adopted Growth Management Plan.

Tier II

It is assumed that 96% of the emission reductions will occur between 1994 and 2010.

INDICATORS

The numbers below represent the daily changes in transportation activity expected for the implementation of the Growth Management Strategy.

| | 1994 | BASELINE |
|--------------------|------------|----------|
| Veh.-trip increase | 1,880 | 0.4% |
| VMT reduction | 1,336,840 | .32% |
| VHT increase | 271,800 | 1.2% |
| | 2010 | BASELINE |
| Veh.-trip increase | 45,120 | .096% |
| VMT Reduction | 32,084,160 | 7.68% |
| VMT Increase | 6,523,200 | 28.8% |

PRIMARY BENEFIT

Tier I

ROG will be reduced by 1.9 tons/day.

Tier II

ROG will be reduced by 44.6 tons/day.

REFERENCES




SCAG, Issues and Action Paper II-A: A Menu of Strategies for Achieving Job/Housing Balance. (Preliminary report); SCAG, Preliminary Growth Management Plan, August 1988. (Preliminary report); Sedway Cooke Associates, Job/housing Balance Strategies/Techniques. Paper presented to SCAG by Sedway Cooke Associates for inclusion in the Growth Management Plan, 1988; SCAG, Baseline, Do We Have A Choice, Growth Management Sensitivity Test and Preliminary Regional Mobility Plan, February 1988.

AQMP COMMITMENT SCHEDULE

MEASURE : 18. GROWTH MANAGEMENT JOB/HOUSING

BALANCE

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|-------------------|------------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | ### ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | ### ### ### | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES o ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### | | |
| ASSIST | | o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### ### ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | ### | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | | ### | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | ### ### | |

TIER I ACTIONS SUMMARIZED:

- o Local governments adopt ordinances by July 1, 1990 to attain job/housing balance targets consistent with the Growth Management Plan when adopted.
- o Local governments and Sanitation districts develop interregional agreements by January 1, 1992, to attain job/housing balance targets consistent with the Growth Management Plan, when adopted.
- o SCAG to assess effectiveness of local programs by January 1, 1994, and proceed, if necessary to consider stronger regional programs.



IV. ENERGY CONSERVATION CONTROL MEASURES

19.a. LOCAL GOVERNMENT ENERGY CONSERVATION

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SUMMARY

SOURCE CATEGORY: Fuel Combustion: Other Services and Commerce, Electric Utilities

CONTROL METHODS: Tier I

- o By January 1, 1990 adoption of local administrative practices to reduce local government energy demand 8% by January 1, 1994, 15% by 2000, and 30% by 2010.
- o Expand SB 880 program to allow assistance and funding for special districts.
- o By January 1, 1990, the California Energy Commission affirms its commitment to continue to develop and finance technical assistance, training and energy projects.

Tier II

No additional control methods.

IMPLEMENTING AGENCIES:

Local jurisdictions, special districts, State for Funding Incentives

IMPLEMENTATION ASSUMPTIONS:

Government commitment to reduce energy consumption by 30%.

Tier I

None of the emission reductions will occur by January 1, 1994.

Tier II

100% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

No primary benefit by 1994.

Tier II

0.03 tons/day of NOx reduction by 2010.

=====

DESCRIPTION OF SOURCE CATEGORIES AND CONTROL MEASURE

Background

According to the California Energy Commission, in 1987, California's 444 cities, 58 counties, and 5,053 special districts spent more than \$2.2 billion for electricity, natural gas, and transportation fuels. Approximately one-third of these dollars were spent by SCAQMD jurisdictions. A recent League of California Cities' survey revealed that nearly 40 percent of responding cities have no organized energy management programs and 25 percent of cities with populations of under 25,000 have not had an energy audit of their facilities.

Conservation measures involving building operation improvements, such as lighting, building envelope and boiler efficiency improvements, can lead to major energy and monetary improvements. The most cost effective measures in the past have been: lighting improvements, heating, ventilation and air conditioning (HVAC) system modifications, water pump and system efficiency, conservation efforts in waste water treatment, and building envelope improvements. The interest of local government in energy management services and efficiency information is different than that of their private sector counterparts because: 1) fragmented budgetary systems often ensure that any savings obtained through energy management are not passed through to those who initiated the investment, and 2) advance financing of energy management strategies, even for those with rapid payback, is not a standard governmental financing approach. Another problem is that special districts, although significant users of energy, have not been included in in education efforts.

The impact of local government energy conservation upon air quality is direct in the case of natural gas consumption because commercial heaters and boilers have known air pollutant emission rates. However, in the case of electricity consumption, the impact is much more difficult to determine. In 1987 the two largest electric utilities in the Basin (Southern California Edison and the LA Department of Water and Power) imported, respectively, 66 and 70 percent of their electricity from outside of the Basin. Most of the remaining in-Basin generating capacity is required to provide reserves in the case of breaks in the transmission of imported electricity. The other use of the in-Basin plants is the provision of electricity during peak demand periods, particularly on hot summer days when air conditioning demand is highest.

There is a potential for energy conservation to reduce air pollution if it assists in the reduction of peak period demand (as is suggested here) and decreased use of older, in-Basin power plants. However, staff of the California Energy Commission estimated that only 2 percent of in-Basin power plant emissions were due to this peak period use. Corresponding data

from the utilities was not available.

Regulatory History

The 1979 AQMP contained N1 Energy Conservation: Commercial, Institution, and Industrial Audits. The program had two parts. First, all institutional, commercial and industrial buildings and facilities would be subject to comprehensive energy use audits, which are detailed, on site examinations and analyses of energy use, followed by recommendations of specific fully cost-effective operations changes. Secondly, implementation and maintenance of the changes at the establishment would be required, but only to fully cost-effective levels. Examples of conservation measures include cogeneration, process efficiency improvement, delamping, increased insulation, heating/ventilating/air conditioning efficiency improvements, water flow restrictions, the elimination of non-essential energy uses (such as fountains and lighting displays), and the installation of solar and other alternative energy equipment.

The 1982 Plan Revision contained N13 Government Energy conservation. In this measure, governments could reduce building energy consumption significantly through a variety of measures including installing individual room light switches, disconnecting unnecessary lights, reducing operating hours for pneumatic tube system operation, better heating, ventilating, and air condition systems efficiency and substitution of natural gas for oil.

Also included was N15 More Efficient Sewage Treatment -- City of Los Angeles. Existing coarse bubble aeration systems in the Los Angeles-Glen-dale and the Terminal Island Sewage Treatment plants would be replaced by fine bubble aeration. Fine bubble systems use 37% less energy than the coarse bubble systems.

Over the last decade, utilities have provided a number of financial incentives to local governments to install new energy efficient equipment in their facilities. Incentives included free audits of facilities, and rebates on energy efficient equipment. Additionally, the California Energy Commission (CEC) and the Energy Extension Service (EES) have funded programs to provide technical assistance to local jurisdictions. SCAG, under funding from the EES, worked with several small cities in 1985 to reduce their energy consumption. In September 1986, the Legislature passed SB 880 (L. Greene), which allocated \$14 million to the CEC for technical and financial assistance programs which would enable cities and counties - but not special districts- to reduce their energy costs. Recent changes in rate structuring for local governments put much more emphasis on reducing peak period consumption than total consumption. From an air pollution reduction perspective, this is also the most effective strategy.

CONTROL METHODS

By January 1, 1990, local jurisdictions and special districts in the SCAB region must begin to budget the energy efficiency improvements to their facilities necessary to reduce overall energy use by 8 percent by 1994, by 15 percent by 2000 and 30 percent by 2010, with a particular emphasis on

peak reduction. These changes could be in lighting improvements, HVAC system modifications, water pump and system efficiency, conservation efforts in waste water treatment, and building envelope improvements or through any other strategy which is demonstrated to reduce the jurisdiction's use of energy.

The California Energy Commission (CEC) should affirm its commitment by January 1, 1990, to continue to develop and finance technical assistance, training, and energy projects through funds made available from state legislative actions and Federal government programs.

One major hole in the existing energy assistance programs is that none of them serve special districts. Irrigation districts, lighting districts, park and recreation districts, harbor districts, airport districts, sanitation districts and water districts are all significant energy consumers. The SCAQMD and SCAG should work with the CEC to expand the SB 880 program to allow assistance and funding for special districts and develop energy assistance programs tailored to the needs of special districts. In addition, increased effort should be undertaken to market these opportunities effectively.

It would be required that the administrative practices adopted by a jurisdiction would include a requirement to generate baseline energy emissions data. Upon implementation, the jurisdiction would be required to monitor the progress and effectiveness of the practices, and report the results and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

Many cost-effective conservation measures are not implemented by local government due to lack of the initial capital. Low-interest loans and other means must be identified to overcome this obstacle. Implementation could be assisted by the adoption of Air Quality Elements to the General Plans of local governments.

COST EFFECTIVENESS

Energy efficiency measures are one of the most cost effective strategies because they pay for themselves in 1 to 20 years (provided that the equipment has a life cycle more than 20 years), and then are a net gain in the remaining life of the project.

OTHER IMPACTS

Energy conservation will prolong the time when new power sources will be required to meet future energy demand, particularly in the transportation sector. Dollars saved from reduced energy consumption can be used for other critical local government programs. Conservation measures also reserve valuable fossil fuel resources for future use, reduce national dependence upon imported energy, improve the national balance of payments, and reduce pressures to exploit natural resources in environmentally

sensitive areas. Increasing our region's energy efficiency will help keep Southern California economically competitive with other Pacific Rim regions.

LEGISLATIVE\RESEARCH NEEDS

Revisions are needed to the SB 880 program to allow assistance and funding for special districts. Research is needed on local government and special district energy consumption and potential savings in Southern California, and on the air quality impacts of electricity conservation measures.

IMPLEMENTATION ASSUMPTIONS

Based upon the CEC staff estimate that only 2 percent of in-Basin power plant emissions are due to peak period use, it will be assumed that this measure and the residential/commercial conservation measure (18.c) result in only a one percent reduction in air emissions from in-Basin electricity generating plants. Even that reduction may be unrealistic if the reduced energy demand only makes it easier for the utilities to meet their scheduled reductions in in-Basin emissions under the Rule 1135.1 court settlement with the SCAQMD. Under that 1982 agreement, the combined NOx emissions for Southern California Edison and the LA Department of Water and Power are to decrease from 76.2 tons/day in 1982 to 43.8 tons/day by 1990 and beyond.

In the category of commercial and other services fuel combustion, the 1985 inventory is 220 million cubic feet/day (MMCFD), based upon the SCAB's prorated share of 1985 Southern California commercial gas consumption. The local government portion of this total is estimated to be 3.5 MMCFD based upon gas consumption data from the City of Los Angeles. The year 2000 and 2010 inventory projections (3.1 and 3.3 MMCFD) are based upon the projected trends in Southern California commercial and other services gas consumption in the 1987 California Gas Report. Using the 1985 SCAB emissions inventory, it is estimated that 31 percent of this total is used for space heating and 69 percent is used for boiler fuel.

Tier I

This measure assumes that none of the emission reductions will occur by January 1, 1994. However, it is assumed that the local administrative practices adoption by January 1, 1990 would achieve an 8% reduction in energy consumption and the CEC would continue to develop and finance technical assistance, training, and energy projects. In addition the SB 880 program would be expanded.

Tier II

This measure assumes 100% of the emission reductions will occur between 1994 and 2010 through the local administrative practices achieving a 15% reduction in energy consumption by 2000 and a 30% reduction by 2010.

INDICATORS

The emission reductions noted below are based upon a reduction in governmental gas consumption of 0.3 MMCFD in 2000 and 0.5 MMCFD in 2010.

Source Category: Fuel Combustion - Other Services and Commerce

| | Year | ROG | NOx | SOx | CO | PM10 | |
|-----------|------|-----|------|-------|------|-------|------|
| Inventory | 1985 | | 2.38 | 37.18 | 5.15 | 11.78 | 1.57 |
| Tier I | | | | | | | |
| Inventory | 2010 | | 3.54 | 46.92 | 7.87 | 18.33 | 2.77 |
| Reduction | 2010 | | 0 | 0 | 0 | 0 | 0 |
| Tier II | | | | | | | |
| Inventory | 2010 | | 3.54 | 46.92 | 7.87 | 18.33 | 2.77 |
| Reduction | 2010 | | 0 | 0.03 | 0 | 0 | 0 |

As noted in the text, there is a lack of data available on the impact of energy conservation, particularly reduction of peak period usage, on electric utility fuel combustion. The data below is based upon the assumption that this measure and the commercial/residential energy conservation measure will result in a combined one percent reduction in emissions.

PRIMARY BENEFIT

Tier I

NOx will not be reduced.

Tier II

NOx will be reduced by 0.03 tons/day.

REFERENCES




California Energy Commission Draft 1988 Conservation Report; League of California Cities 1987 Update Energy Activities Survey.

AQMP COMMITMENT SCHEDULE

MEASURE : 19.a. LOCAL GOVERNMENT ENERGY

CONSERVATION

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE |  EXISTING LOCAL GOVERNMENT OPTIONS | o GENERAL PLANS o RHNA | ### | | |
| FACILITATE | | o FAST TRACK o BONUS DENSITIES o A-95 | | | |
| LOCAL REGs. | | o ZONING o BUS. LICENSES | ### | | |
| ASSIST | | o ACTIONS AS AN EMPLOYER & CONTRACTOR o REDEVEL. \$ o ENTERPRISE ZONES o TRANSIT \$ | ### | | |
| AGREEMENTS |  COOPERATIVE PARTNERSHIPS FORGED | o MOU'S & JPA's | | | |
| LEGISLATION | | o INCREASE \$ o NEW AUTHORITIES | ### ### | | |
| REGIONAL REGULATION |  TOP DOWN CONTROL | o SCAQMD o SEWER ALLOCATIONS o GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- o Adoption of local administrative practices by January 1, 1990, to reduce local government energy demand by 8%.
- o Expand the SB 880 program to allow assistance and funding for special districts.

19.b. WASTE RECYCLING

SUMMARY

SOURCE CATEGORY: Fuel Combustion: Other Manufacturing/Industrial

CONTROL METHODS: Tier I

- o Local governments adopt ordinances by January 1, 1990, to reduce the amount of local residential solid waste requiring disposal by 25 percent by 1994 and 35 percent by 2000.
- o Absent local government ordinances by January 1, 1992 ARB, SCAG, and SCAQMD should work toward passage of AB 3298 or similar state legislation to require local governments to reduce the amount of refuse requiring disposal by 25 percent by 1994 and 35 percent by 2000.
- o By January 1, 1990, amend SCAQMD Rule 1117 to require glass manufacturers to increase their consumption of glass cullet from roughly 20 percent to 30 percent by 1994, 52 percent by 2000, and 75 percent by 2010. Require paper product manufacturers to increase their use of recycled paper to reflect increases in the supply of recycled paper from 19 percent to 27.5 percent by 1994 and 45 percent by 2010.
- o Seek State legislation by January 1, 1990, to impose a tax on product packaging that reflects the true cost associated with collecting and disposing the material as waste.

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

Local Jurisdictions, SCAQMD, ARB, State Legislature

IMPLEMENTATION
ASSUMPTIONS:

Recycling targets for glass plant raw materials (increase cullet content from 20% to 75%) and paper plant raw materials (increase recycled paper content from 19% to 45%).

Tier I

20% of the emission reductions will occur by January 1, 1994.

Tier II

80% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

0.2 tons/day NOx reduction by 1994.

Tier II

0.82 tons/day NOx reduction by 2010.

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DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background and Regulatory History

There is no reference to this strategy in the 1979 AQMP or the 1982 Plan Revision.

In 1987, the four counties in the South Coast Air Basin generated 21,665,000 tons of solid waste that was disposed in Class III non-hazardous waste landfills. Of this total, roughly 9 million tons were residential waste under the jurisdiction of local government. According to local county solid waste plans, the most commonly recycled materials - newspaper, glass and metals - compose from 19-23 percent of local municipal solid waste (MSW). In addition, non-newsprint paper composes from 11-38 percent, compostable yard waste from 18-32 percent and molded plastics form 2-6 percent of local MSW. Taken together, these materials compose from 62-85 percent of the entire local residential and commercial waste stream and represent a significant opportunity for increased waste recycling.

While recycling has a long and active local history, it is only now being viewed by local officials as a potential means of handling a significant portion of the solid waste stream. This view is based upon both the lack of disposal alternatives and the increasing economic attractiveness of recycling when compared to the escalating costs of landfilling, long-distance transfer and waste-to-energy. Of particular importance is that fact that, without the approval of new or expanded landfill facilities, there is projected to be a shortage in daily disposal capacity in Los Angeles County by 1991 and in western San Bernardino County by 1995.

There are eight glass container manufacturing facilities and three other glass product manufacturing plants in the South Coast Air Basin.

Currently, under Rule 1117, glass manufacturers have been required to use glass cullet (recycled glass) for at least 20 percent of the raw material feedstock. The advantage of using cullet is that for every additional percent of cullet used as feedstock, there is a reduction in energy consumption of 12,000 BTU/ton of glass pulled and there is a direct relationship between energy use and NOx emissions. (Using District data, it is estimated that an increase in the use of glass cullet from 20-75 percent will decrease glass plant NOx emissions by 14 percent.) There is no theoretical limit to the percentage of cullet that can be used in glass production and the shortage of cullet has limited the District's ability to require higher percentages of cullet use.

That shortage is being alleviated under AB 2020, the 1986 California Beverage Container Recycling and Litter Reduction Act. That bill set a beverage container recycling goal of 80 percent and required container manufacturers to finance a system of 1-3 cent redemption values to meet that goal. The State Department of Conservation is overseeing the development of a network of over 2,000 official recycling centers that pay the public a minimum of 1 cent for every returned beverage container. In order to assure the financial viability of the recycling centers, glass container manufacturers have also been required to more than double the scrap value of recycled glass. These measures have already begun to increase glass beverage container recycling rates to 35 percent as of November, 1987.

There are also significant energy savings from the use of recycled paper in the production of new paper products. According to Garden State Paper Company in Pomona, it requires 35 percent less energy to make newsprint from recycled paper than from imported pulp. This is primarily due to lower refining requirements. Similar energy reductions would be anticipated at other paper product manufacturers in the Air Basin. (It is assumed that an increase in the use of recycled paper from 19-45 percent will decrease paper product plant NOx emissions by 7 percent.)

The extent of recycled paper use in the industry varies considerably according to the type of product being manufactured. California recycling rates range from 60 percent for used corrugated boxes, 35 percent for old newsprint, and 5-20 percent for high grades used to make fine quality paper and tissue. The overall 1987 California paper recycling rate is 35 percent of total paper consumed, with 1.85 million tons (or 19 percent) recycled domestically and 1.61 million tons exported. There is generally no theoretical limit on the percentage of used paper that can be used in paper product manufacturing and roughly a third of American paper product plants utilize waste paper as their entire fibrous material feedstock. Nevertheless, there is resistance in some areas due to a perception that recycled paper is of lower quality. In addition, as with glass, recycled paper must compete with relatively low cost virgin raw materials and the cost of recycled paper, particularly high grades, is sometimes higher than paper made from wood pulp.

While AB 2020 has no direct effect on paper recycling, there are numerous proposed pieces of legislation that may significantly increase the

recycling of both paper and glass in California. In particular, AB 3298 (Killea-Cortese) is a comprehensive effort to increase recycling rates through requirements on local government to prepare and implement waste reduction and recycling programs. Similar statewide legislation has been enacted in New Jersey and Oregon. Interest in such legislation has been spurred by opposition to the siting of waste-to-energy facilities and landfills, in large part due to environmental concerns over air and water quality.

The target recycling level in AB 3298 is 25 percent within three years of County Solid Waste Plan revision and "the maximum amount feasible . . . within a reasonable period". Since the bill focuses upon the total residential, commercial and industrial waste stream, achievement of the goal will depend upon a finding of the currently unknown level of total statewide recycling. It is known that less than ten percent of residential solid waste is currently recycled and the bill should lead to a significant increase in the overall rate of recycling in California. Recycling organizations have suggested a goal of 35 percent recycling by the year 2000. This is considered feasible given the previously noted high levels of recyclables in the waste stream (from 62-85 percent of commercial and residential waste).

Such legislation will sufficiently increase recycling rates to facilitate regulations requiring glass and paper product manufacturing plants to increase their use of recycled glass and paper.

An additional way to encourage manufacturers to reduce solid waste and to generate funds for local recycling programs is to impose a statewide tax on product packaging that reflects the cost associated with collecting and disposing the material as waste. In the past, support has been given to a tax of \$20/Ton of a "penny-a-pound." This figure, which once corresponded to average solid waste collection and disposal costs, is below the current average cost in Southern California of \$50-\$60 per ton.

CONTROL METHODS

Local governments should by January 1, 1990, adopt ordinances to reduce the amount of local residential solid waste requiring disposal by 25 percent by 1994 and 35 percent by 2010. In absence of action by local government, the ARB, SCAG, and SCAQMD would work toward passage of AB 3298 or similar state legislation to require local government to reduce the amount of refuse requiring disposal by 25 percent by 1994 and 35 percent by 2000.

Funding for local recycling programs should be provided through passage of state legislation, by January 1, 1990, to tax product packaging at a rate that reflects the cost of collecting and disposing the material as waste.

By January 1, 1990, SCAQMD should amend SCAQMD Rule 1117 to require glass manufacturers to increase their consumption of glass cullet from roughly 20 percent to 30 percent by 1994, 52 percent by 2000 and 75 percent by 2010, and require paper product manufacturers to increase their use of recycled paper to reflect increases in the supply of recycled paper from 19 percent

to 27.5 percent by 1994 and to 45 percent by 2010.

All of the ordinances and regulations would require that baseline energy emissions data be generated. Upon implementation the jurisdiction would be required to monitor the progress and effectiveness of the ordinance, and report the results and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

In the absence of state financial support (through a packaging tax or other means), local government may resist the higher cost of recycling programs and the dependence upon variable recycling markets. In particular, more stable markets are needed for recycled paper, plastics and composted yard waste.

COST EFFECTIVENESS

Because the measure results in the conservation of energy, there are inherent cost reductions that make it relatively attractive to manufacturers, even without regulatory requirements.

The increase in the availability of recycled materials will be primarily driven by the need for alternative means of waste disposal. Nevertheless, recycling programs usually entail increases in solid waste management costs. According to a recent SCAG study for San Gabriel Valley cities, the average household disposal cost could increase from \$9.35/month to \$13.06/month for a system with 50 percent recycling and composting and 50 percent landfilling.

Recycled paper and glass are traditionally available to paper product and glass manufacturers at similar or lower costs than virgin raw materials.

OTHER IMPACTS

Improved markets for recycled glass and paper will assure the viability of municipal programs to encourage or require the recycling of those materials. Market development has been identified as perhaps the key factor in the future expansion of recycling as a solid waste management alternative.

Increased recycling will reduce the amount of refuse requiring disposal in the declining number of local landfills.

Paper recycling is environmentally preferable to the incineration of paper in waste-to-energy facilities. In addition to reducing air emissions, paper recycling conserves more energy than is produced in the incineration process.

Other benefits of recycling include reduced litter and litter collection costs, increased employment in labor intensive recycling programs, and conservation of natural resources.

LEGISLATIVE/RESEARCH NEEDS

In order to significantly increase recycling levels, state legislation will be needed to require local government to enact recycling and waste reduction programs as environmentally preferable to landfills and waste-to-energy. Given the benefits of recycling in terms of air quality, energy conservation, waste reduction, litter control, and resource conservation, such statewide recycling legislation should be supported. The legislation must include a requirement that the level of recycling be closely monitored in order to assure that the use of recycled materials by glass and paper product manufacturers closely follows increases in the availability of those materials.

State legislation is also needed to tax product packaging at a rate that reflects the cost of collecting and disposing the material as waste. Funds from the tax should be used to support local government recycling programs.

Research is needed on the air quality impacts of increased use of recycled raw materials in both the glass and paper product industries and the amount of recycled materials currently being used.

IMPLEMENTATION ASSUMPTIONS

According to the ARB's "Forecasted Emissions by Growth Category and Control Category (2/1/88)", the NOx emissions from furnaces and I.C. engines for glass/glass product plants are forecasted to be 5.97 tons/day in 2000 and 6.19 tons/day in 2010. Using SCAQMD data, it is estimated that an increase in glass cullet use from 20 percent to 75 percent will decrease NOx emissions by 14 percent. The measure projects a 14 percent decrease in NOx emissions by 2010 and a 7 percent decrease by 2000.

Utilizing the same ARB source, the NOx emissions from boilers and I.C. engines for paper and allied product plants are forecasted to be 2.17 tons/day in 2000 and 2.25 tons/day in 2010. It is projected that an increase in recycled paper use from 19 percent to 45 percent will decrease NOx emissions by 7 percent. The measure projects a 7 percent decrease in NOx emissions by 2010 and a 3.5 percent decrease by 2000.

Tier I

This measure assumes 20% of the emission reductions will occur by January 1, 1994, through the adoption by January 1, 1990 of local government ordinances reducing the amount of local residential solid waste requiring disposal by 25%. In addition it is assumed that by January 1, 1990, the SCAQMD Rule 1117 would be amended and glass manufacturers would have increased their consumption of glass cullet to 30% by 1994 and paper product manufacturers would have increased their use of recycled paper by 27.5% by 1994.

Tier II

This measure assumes 80% of the emission reductions will occur between 1994 and 2010 through local government ordinances achieving a 35% reduction by 2000, and the SCAQMD Rule achieving for glass cullet consumption by 52% by 2000 and 75% by 2010, and recycled paper consumption by 45% by 2010.

INDICATORS

While the basis for the following emission reductions is decreased fuel consumption, there was insufficient data available to document the projected reduction in energy consumption for the measure. As a result, the emission reductions were based upon the noted projected percentage decreases in identified NOx emissions.

| Source Category: Fuel Combustion - Other Manufacturing/ Industrial | | | Year | ROG | NOx | SOx | CO |
|---|-----------|------|------|-------|------|-------|------|
| | Inventory | 1985 | 2.94 | 60.55 | 1.68 | 13.10 | 1.45 |
| <u>Tier I</u> | Inventory | 2010 | 3.38 | 40.79 | 1.71 | 14.88 | 1.63 |
| | Reduction | 2010 | - | 0.20 | - | - | - |
| <u>Tier II</u> | Inventory | 2010 | 3.38 | 40.79 | 1.71 | 14.88 | 1.63 |
| | Reduction | 2010 | - | 0.82 | - | - | - |

PRIMARY BENEFIT

Tier I

NOx will be reduced by 0.2 tons/day.

Tier II

NOx will be reduced by 0.82 tons/day.

REFERENCES

"The Question of Markets: Focus on Southern California - White Paper Prepared for 'Recycling Markets: California and the Pacific Rim,'" Gildea Resource Center, March, 1988; "Towards a Comprehensive State Recycling Policy and Program," California Resource Recovery Association, February, 1988; "Priorities for Successful Comprehensive Recycling Legislation," Californians Against Waste, March 1, 1988; "The Feasibility of Hauling Solid Waste by Railroad from the San Gabriel Valley to Remote Disposal Sites," SCAG, April, 1988.

AQMP COMMITMENT SCHEDULE

MEASURE : 19.b. WASTE RECYCLING

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|-------------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | ### | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | ### ### ### | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- Local governments adopt ordinances by January 1, 1990, to reduce the amount of local residential solid waste requiring disposal.
- Adopt SCAQMD rule by January 1, 1990, to require increased consumption of glass cullet and increase use of recycled materials by manufacturers.
- Seek State legislation by January 1, 1990, to impose a tax on product packaging that reflects the true cost associated with collecting and disposing of the material as waste.

19.c. PRICING, TAX, AND SUBSIDY INCENTIVES

SUMMARY

SOURCE CATEGORY: Fuel Combustion: Residential, Other Services and Commerce, Electric Utilities

CONTROL METHODS: Tier I

- o The CEC enact mandatory commercial sector energy building standards by January 1, 1990.
- o Basin utilities reinstate low interest loans and cash rebates for customers purchasing energy efficient equipment and implementing weatherization by January 1, 1990.
- o Basin utilities adopt a surcharge for excessive energy use in residential and commercial sectors by January 1, 1990.
- o Basin utilities seek state and federal legislation for tax credits for implementation of energy conservation measures by January 1, 1990.

Tier II

No additional control methods.

IMPLEMENTING
AGENCIES:

Local jurisdictions, utilities, California Energy Commission (CEC)

IMPLEMENTATION
ASSUMPTIONS:

Tax subsidies to encourage a 15% reduction in fuel consumption.

Tier I

15% of the emission reductions will occur by January 1, 1994.

Tier II

85% of the emission reductions will occur between 1994 and 2010.

PRIMARY BENEFIT:

Tier I

0.9 tons/day NOx reduction by 1994.

Tier II

5.1 tons/day NOx reduction by 2010.

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DESCRIPTION OF SOURCE CATEGORIES AND CONTROL MEASURE

Background

Energy efficiency improvements over the last decade have been largely responsible for California's current favorable energy situation. If California had not invested in energy efficiency during this period, the electricity consumption expected by 1992 would be 16 percent higher. According to the California Energy Commission (CEC), energy savings from commercial and residential building standards adopted by the CEC since 1977 will total over 13,700 gigawatt hours (GWh) and 974 million therms by the year 1999. Through conservation, Californians avoided paying electricity costs of \$1.9 billion in 1985; in 1992, that amount will rise to \$3.4 billion.

Commercial energy efficiency improvements, while substantial, have not been as large as those of the residential sector. The commercial sector is expected to continue its recent trend as the fastest-growing user of electricity. The lower prices for large customers resulting from recent rate restructuring will decrease incentives to invest in energy efficiency. However, smaller commercial customers may end up paying higher prices; thus, economic incentives to invest in conserving energy should be more attractive to small businesses.

In May 1987, the California Public Utilities Commission published a "Statewide Saturation Survey on Weatherized Dwelling Units" based upon a survey conducted from 11/85-2/86. The survey documents the fact that there is a significant degree of remaining potential for residential weatherization measures. According to the survey, the following is the percent remaining potential for the listed weatherization measures in Southern California:

| <u>Measure</u> | <u>Percent Remaining Potential*</u> |
|-----------------------------|-------------------------------------|
| (1) R-19 Ceiling Insulation | 57.4 |
| R-11 Ceiling Insulation | 29.6 |
| (2) Weatherstripping | 59.2 |
| (3) Caulking | 54.7 |
| (4) Water Heater Blankets | 39.6 |
| (5) Ceiling Duct Insulation | 31.5 |
| Wall Insulation | 72.8 |
| Floor Insulation | 92.9 |
| Setback Thermostats | 89.6 |

*Percent remaining potential is derived by dividing the "unconstrained potential" (dwelling units physically capable of utilizing the devices) by the remaining potential (unconstrained potential minus those units utilizing the devices)

Despite the large remaining weatherization potential, the Weatherization Financing and Credits Program was discontinued on March 31, 1986, on the recommendation of both the Southern California Gas Company and the California Public Utilities Commission. The program had provided low interest loans or cash rebates to residential customers for comprehensive weatherization measures. At the time, both agencies believed that the attic insulation program had reached such a low level of remaining potential that it would not be cost-effective to operate the comprehensive weatherization program. While it is not known whether the 1987 report will cause a re-evaluation of the decision to discontinue the program, it is clear that there continues to be a significant need for residential weatherization efforts.

The impact of energy conservation upon air quality is direct in the case of natural gas consumption because both residential and commercial heaters and boilers have known air pollutant emission rates. However, in the case of electricity consumption, the impact is much more difficult to determine. (See the Local Government Energy Conservation measure for a further discussion).

There is insufficient information available to determine whether there is a significant potential for additional energy conservation in the industrial sector. Because a higher portion of industrial costs are related to energy consumption, it is believed that local industry has already implemented the most cost-effective conservation measures. In addition, industrial electricity demand is less characterized by high peak demand periods than commercial and residential electricity demand.

Regulatory History

The 1979 AQMP contained N2 Energy Conservation -- Residential Retrofit Program. The program required the retrofit installation of conservation measures, such as increased insulation, weather stripping, night thermostat setbacks, water flow restrictors, intermittent ignition devices, more efficient appliances and lighting, and perhaps solar energy equipment. Upon sale of a residence in the SCAG, the owner or buyer would be required to install the conservation devices.

N1 Energy Conservation -- Commercial, Institution and Industrial Audits called for a two-part program: First, all institutional, commercial and industrial buildings and facilities would be subject to comprehensive energy use audits, which are detailed, on site examinations and analyses of energy use, followed by recommendations of specific fully cost-effective operation changes. Secondly, implementation and maintenance of the changes at the establishment would be required, but only to fully cost-effective levels. Examples of conservation improvement, delamping, increased

insulation, heating/ventilating/air conditioning efficiency improvement, water flow restrictions, the elimination of non-essential energy uses (such as fountains and lighting displays), and the installation of solar and other alternative energy equipment.

The 1982 Plan Revision called for N1 Retrofit Weatherproofing of Existing Homes. This measure involved the retrofit installation of five weatherproofing measures -- water heater installation blankets, low-flow showerheads, R-19 ceiling insulation, caulking and weather stripping, and duct insulation -- at the time of sale of single family residences in SCAB built prior to 1985.

N10 Energy Conservation Standards for New Residences required the enactment of new standards that would reduce energy needs for heating and cooling by calling for the developer to incorporate elements from among the following: active solar, passive solar, and higher levels of insulation than are currently practiced. Builders could select such items as solar water heater, double- and triple-glazing, heat pumps, shading, and overhangs.

For the past decade, California has not priced its utility and gas services to each class of customers by actual cost of providing the service to that class. When energy prices rose dramatically, one result was that industrial customers found themselves burdened with a greater share of the costs, as regulators and utilities have tried to shelter residential customers. The recent trend is toward real-time pricing which more accurately reflects the cost of a utility's doing business. Such a policy discourages the use of the least efficient and most polluting power plants which are brought on line only to meet peak demand.

Real-time pricing is a reflection of a general unbundling of rates in order to charge customers different amounts for different components of service. This approach of allowing each utility more freedom to structure rates to attain the lowest peak use does lead to less generation of power and pollution in the Air Basin. However, in some cases this freedom is also used by the utilities to keep rates of large industrial customers low enough so that they do not shift to another energy source.

CONTROL METHODS

The California Energy Commission should enact mandatory commercial sector energy building standards by January 1, 1990. Basin utilities (SCE, LADWP, and SCG) should reinstate by January 1, 1990, low interest loans and cash rebates for residential and commercial customers purchasing energy efficient equipment and implementing weatherization measures. A major educational effort should accompany the new program.

Basin utilities should by January 1, 1990 adopt a surcharge for both overall excessive use of energy and for excessive use during peak periods in both the residential and commercial sectors.

SCAG, SCAQMD, ARB and Basin utilities should seek state and federal legislation for tax credits for the implementation of energy conservation

measures in all sectors.

All of the implementing agencies would be required to generate baseline energy emissions data. Upon implementation, the agencies would be required to monitor the progress and effectiveness of the standards and programs, and report the results and baseline data annually to SCAG for incorporation into the RFP Report.

IMPLEMENTATION ISSUES

There is an inaccurate perception that cost-effective energy conservation measures have already been implemented. Recent declines in the cost of energy have also eroded public and legislative support for energy conservation.

COST EFFECTIVENESS

These measures are highly cost effective as increased energy efficiency means reductions in charges for the use of energy.

OTHER IMPACTS

Energy conservation helps maintain Southern California's economic competitiveness in the World market and reduces uncertainty in planning for future energy needs. In addition, it conserves limited natural resources, saves consumers money, reduces national dependence upon imported energy, improves the national balance of payments, and reduces pressures to exploit natural resources in environmentally sensitive areas. However, the impacts of providing energy conservation incentives are partially dependent upon the difficult-to-predict cost of energy to the utilities and the corresponding price of energy to consumers.

LEGISLATIVE/RESEARCH NEEDS

Research is needed on the air quality impacts of energy conservation in the commercial and industrial sectors. In particular, the air quality impact of electricity conservation needs study given the high proportion of imported electricity in the Basin. State and federal legislation is required to provide the necessary financial incentives for significant increases in energy conservation and to require the CEC to adopt mandatory commercial sector energy efficiency standards.

IMPLEMENTATION ASSUMPTIONS

In the category residential fuel combustion, the 1985 inventory is 593 million cubic feet/day (MMCFD), based upon the SCAB's prorated share of 1985 Southern California residential gas consumption. The year 2000 and 2010 inventory projections (580 and 589 MMCFD) are based upon projected Southern California residential gas consumption in the 1987 California Gas Report. Using the 1985 SCAB emissions inventory, it is estimated that 58 percent of this total is used for space heating and 42 percent is used for water heating. The emissions reductions are based upon a phased 10 percent

reduction in this consumption in 2000 and a 15 percent reduction by the year 2010 from a 1990 starting date.

In the category commercial and other services fuel combustion, the 1985 inventory is 220 million cubic feet/day (MMCFD), based upon the SCAB's prorated share of 1985 Southern California commercial gas consumption. Because the Gas Report combines government and commercial consumption, this total must be reduced to 217 MMCFD to avoid double counting with the Local government conservation measure. The year 2000 and 2010 inventory projections (196 and 208 MMCFD) are based upon projected Southern California commercial gas consumption in the 1987 California Gas Report. Using the 1985 SCAB emissions inventory, it is estimated that 31 percent of this total is used for space heating and 69 percent is used for boiler fuel. The emissions reductions are based upon a 10 percent reduction in this consumption in 2000 and a 15 percent reduction by the year 2010.

Tier I

This measure assumes 15% of the emission reductions will occur by January 1, 1994, through the enactment of building standards, reinstatement of low interest loans and cash rebates, adoption of surcharges for excessive energy use and state and federal tax credits by January 1, 1990.

Tier II

This measure assumes 85% of the emission reductions will occur between 1994 and 2010.

INDICATORS

The emission reductions noted below are based upon a reduction in residential gas consumption of 58.0 MMCFD in 2000 and 88.4 MMCFD in 2010.

Source Category: Fuel Combustion - Residential

| | | Year | ROG | NOx | SOx | CO | PM10 |
|----------------|-----------|------|------|-------|------|-------|------|
| | Inventory | 1985 | 1.30 | 30.41 | 0.76 | 12.14 | 1.44 |
| <u>Tier I</u> | Inventory | 2010 | 2.04 | 32.43 | 1.10 | 19.14 | 2.26 |
| | Reduction | 2010 | 0.03 | 0.59 | 0 | 0.13 | 0.01 |
| <u>Tier II</u> | Inventory | 2010 | 2.04 | 32.43 | 1.10 | 19.14 | 2.26 |
| | Reduction | 2010 | 0.20 | 3.32 | 0 | 0.75 | 0.05 |

The emission reductions noted below are based upon a reduction in commercial gas consumption of 19.6 MMCFD in 2000 and 31.2 MMCFD in 2010.

Source Category: Fuel Combustion - Other Services and Commerce

| | Year | ROG | NOx | SOx | CO | PM10 |
|-----------|------|------|-------|------|-------|------|
| Inventory | 1985 | 2.38 | 37.18 | 5.15 | 11.78 | 1.57 |
| Inventory | 2010 | 3.54 | 46.92 | 7.87 | 18.33 | 2.77 |
| Reduction | 2010 | 0.01 | 0.25 | 0 | 0.05 | 0 |
| | Year | ROG | NOx | Sox | CO | PM10 |
| Inventory | 2010 | 3.54 | 46.92 | 7.87 | 18.33 | 2.77 |
| Reduction | 2010 | 0.07 | 1.41 | 0.01 | 0.26 | 0.03 |

As noted in the text, there is a lack of data available on the impact of energy conservation, particularly reduction of peak period usage, on electric utility fuel combustion. The data below is based upon the assumption that this energy conservation measure will result in a one percent reduction in emissions.

Source Category: Fuel Combustion - Electric Utilities

| | Year | ROG | NOx | SOx | CO | PM10 |
|-----------|------|------|-------|------|------|------|
| Inventory | 1985 | 2.27 | 45.53 | 4.55 | 8.18 | 1.70 |
| Inventory | 2010 | 2.27 | 45.90 | 8.14 | 7.34 | 1.97 |
| Reduction | 2010 | 0 | 0.06 | 0.01 | 0.01 | 0 |
| Inventory | 2010 | 2.27 | 45.90 | 8.14 | 7.34 | 1.97 |
| Reduction | 2010 | 0.02 | 0.37 | 0.07 | 0.06 | 0.02 |

PRIMARY BENEFIT

Tier I

NOx will be reduced by 0.90 tons/day.

Tier II

NOx will be reduced by 5.10 tons/day.

REFERENCES

California Energy Commission 1988 Conservation Report Draft; California Public Utilities Commission "Statewide Survey on Weatherized Dwelling Units", May, 1987; 1987, 1986 California Gas Report, prepared by the California Gas and Electric Utilities.

AQMP COMMITMENT SCHEDULE

MEASURE : 19.c. PRICING, TAX, AND SUBSIDY

INCENTIVES

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|------------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS FORGED ↓ | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | ### ### | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | | | |

TIER I ACTIONS SUMMARIZED:

- The CEC enact mandatory commercial sector energy building standards by January 1, 1990.
- Basin utilities reinstate low interest loans and cash rebates for customers purchasing energy efficient equipment and implementing weatherization by January 1, 1990.
- Basin utilities adopt a surcharge for excessive energy use in residential and commercial sections by January 1, 1990.
- Basin utilities seek state and federal legislation for tax credits for implementation of energy conservation measures by January 1, 1990.



V. AIR QUALITY BENEFITS

EMISSION REDUCTION SUMMARY FOR TIER I

| Source Category | Year | | Tons Per Annual Average Day | | | | |
|--|------|------------|-----------------------------|--------|-------|---------|--------|
| | | | ROG | NOX | SOX | CO | PM10 |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 5.48 | 4.18 | 0.82 | 62.21 | 0.64 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 6.17 | 4.75 | 1.05 | 71.18 | 0.74 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.40 | 7.76 |
| | | Reductions | 2.13 | 1.72 | 0.48 | 25.01 | 0.21 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 3.42 | 2.40 | 0.65 | 45.68 | 0.25 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.80 |
| | | Reductions | 1.32 | 6.64 | 0.70 | 10.20 | 0.78 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Reductions | 1.73 | 7.80 | 0.82 | 11.03 | 0.82 |
| Trains | 2000 | Inventory | 8.38 | 32.55 | 3.56 | 15.08 | 1.88 |
| | | Reductions | -0.11 | -0.44 | -0.05 | -0.20 | -0.03 |
| | 2010 | Inventory | 9.92 | 38.80 | 4.24 | 17.95 | 2.24 |
| | | Reductions | -0.03 | -0.13 | -0.01 | -0.06 | -0.01 |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 0.20 | 1.06 | 0.05 | 0.35 | 0.01 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 0.24 | 1.25 | 0.06 | 0.44 | 0.01 |
| Road Dust | 2000 | Inventory | 0.00 | 0.00 | 0.00 | 0.00 | 705.83 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 27.50 |
| | 2010 | Inventory | 0.00 | 0.00 | 0.00 | 0.00 | 764.18 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 29.77 |
| Fuel Combustion | 2000 | Inventory | 10.44 | 151.58 | 17.62 | 54.30 | 7.87 |
| | | Reductions | 0.03 | 0.70 | 0.01 | 0.13 | 0.01 |
| | 2010 | Inventory | 11.23 | 166.04 | 18.82 | 59.69 | 8.63 |
| | | Reductions | 0.05 | 1.10 | 0.01 | 0.19 | 0.02 |
| Total Transportation Land Use & Energy Conservation Reductions | 2000 | Inventory | 291.89 | 674.87 | 54.49 | 3137.24 | 764.28 |
| | | Reductions | 9.05 | 13.85 | 2.01 | 97.69 | 29.11 |
| | 2010 | Inventory | 365.32 | 790.67 | 64.78 | 4079.52 | 830.54 |
| | | Reductions | 11.57 | 17.17 | 2.58 | 128.45 | 31.61 |

Note: The summation process accounts for overlapping emission benefits from different measures.

EMISSION REDUCTION SUMMARY FOR TIER II

| Source Category | Year | | Tons Per Annual Average Day | | | | |
|--------------------------------|------|------------|-----------------------------|--------|-------|---------|--------|
| | | | ROG | NOX | SOX | CO | PM10 |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 54.17 | 46.31 | 8.37 | 611.06 | 6.94 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 64.18 | 57.37 | 10.84 | 743.30 | 8.64 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.40 | 7.76 |
| | | Reductions | 22.44 | 21.33 | 5.01 | 265.51 | 2.44 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 40.66 | 36.36 | 7.09 | 557.93 | 3.55 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.80 |
| | | Reductions | 7.70 | 51.85 | 4.46 | 57.91 | 6.26 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Reductions | 11.34 | 65.19 | 5.43 | 70.40 | 6.88 |
| Trains | 2000 | Inventory | 8.38 | 32.55 | 3.56 | 15.08 | 1.88 |
| | | Reductions | 5.11 | 19.83 | 2.17 | 9.19 | 1.15 |
| | 2010 | Inventory | 9.92 | 38.80 | 4.24 | 17.95 | 2.24 |
| | | Reductions | 9.17 | 35.86 | 3.92 | 16.59 | 2.07 |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 2.94 | 7.65 | 0.69 | 14.31 | 0.36 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 3.55 | 9.32 | 0.83 | 16.88 | 0.41 |
| Road Dust | 2000 | Inventory | 0.00 | 0.00 | 0.00 | 0.00 | 705.83 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 177.50 |
| | 2010 | Inventory | 0.00 | 0.00 | 0.00 | 0.00 | 764.18 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 193.22 |
| Fuel Combustion | 2000 | Inventory | 10.44 | 151.58 | 17.62 | 54.30 | 7.87 |
| | | Reductions | 0.19 | 3.80 | 0.07 | 0.71 | 0.07 |
| | 2010 | Inventory | 11.23 | 166.04 | 18.82 | 59.69 | 8.63 |
| | | Reductions | 0.28 | 5.94 | 0.08 | 1.07 | 0.09 |
| Total Transportation | 2000 | Inventory | 291.89 | 674.87 | 54.49 | 3137.24 | 764.28 |
| | | Reductions | 92.54 | 150.77 | 20.77 | 958.69 | 194.70 |
| Land Use & Energy Conservation | 2010 | Inventory | 365.32 | 790.67 | 64.78 | 4079.52 | 830.54 |
| | | Reductions | 129.18 | 210.04 | 28.18 | 1406.16 | 214.87 |

Note: The summation process accounts for overlapping emission benefits from different measures.

EMISSION REDUCTION SUMMARY FOR TIERS I & II

| Source Category | Year | | Tons Per Annual Average Day | | | | |
|---|------|------------|-----------------------------|--------|-------|---------|--------|
| | | | ROG | NOX | SOX | CO | PM10 |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 59.65 | 50.49 | 9.19 | 673.27 | 7.58 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 70.36 | 62.12 | 11.89 | 814.48 | 9.39 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.40 | 7.76 |
| | | Reductions | 24.57 | 23.05 | 5.49 | 290.52 | 2.64 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 44.08 | 38.76 | 7.75 | 603.61 | 3.80 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.80 |
| | | Reductions | 9.01 | 58.49 | 5.16 | 68.11 | 7.03 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Reductions | 13.07 | 72.99 | 6.24 | 81.43 | 7.70 |
| Trains | 2000 | Inventory | 8.38 | 32.55 | 3.56 | 15.08 | 1.88 |
| | | Reductions | 4.99 | 19.40 | 2.12 | 8.99 | 1.12 |
| | 2010 | Inventory | 9.92 | 38.80 | 4.24 | 17.95 | 2.24 |
| | | Reductions | 9.13 | 35.73 | 3.90 | 16.53 | 2.06 |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 3.14 | 8.70 | 0.74 | 14.66 | 0.36 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 3.78 | 10.57 | 0.89 | 17.31 | 0.42 |
| Road Dust | 2000 | Inventory | 0.00 | 0.00 | 0.00 | 0.00 | 705.83 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 204.99 |
| | 2010 | Inventory | 0.00 | 0.00 | 0.00 | 0.00 | 764.18 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 222.99 |
| Fuel Combustion | 2000 | Inventory | 10.44 | 151.58 | 17.62 | 54.30 | 7.87 |
| | | Reductions | 0.22 | 4.50 | 0.08 | 0.84 | 0.08 |
| | 2010 | Inventory | 11.23 | 166.04 | 18.82 | 59.69 | 8.63 |
| | | Reductions | 0.33 | 7.04 | 0.09 | 1.26 | 0.11 |
| Total Transportation Land Use & Energy Conservation Reductions | 2000 | Inventory | 291.89 | 674.87 | 54.49 | 3137.24 | 764.28 |
| | | Reductions | 101.59 | 164.62 | 22.78 | 1056.37 | 223.81 |
| | 2010 | Inventory | 365.32 | 790.67 | 64.78 | 4079.52 | 830.54 |
| | | Reductions | 140.75 | 227.21 | 30.76 | 1534.62 | 246.48 |

Note: The summation process accounts for overlapping emission benefits from different measures.

1. Alternative Work Schedules & Locations

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO average day | PM10 |
|-----------------------|---------------|------------|--------|--------------------|--------------------|-------------------|-------|
| Tier I | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 0.84 | 0.85 | 0.13 | 9.88 | 0.12 |
| | 2010 | Inventory | 6.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 0.95 | 0.96 | 0.16 | 11.29 | 0.14 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Reductions | 0.33 | 0.35 | 0.07 | 3.97 | 0.04 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 0.53 | 0.49 | 0.10 | 7.25 | 0.05 |
| Tier II | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 13.21 | 13.26 | 2.00 | 154.81 | 1.93 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 14.85 | 15.05 | 2.55 | 176.89 | 2.24 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Reductions | 5.13 | 5.46 | 1.17 | 62.18 | 0.62 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 8.23 | 7.62 | 1.59 | 113.53 | 0.77 |

2. Mode Shift Strategies

| Source Category | Forecast Year | | ROG | NOX | SOX | CO | PM10 |
|-----------------------|---------------|----------------------|-------------------------|----------------|---------------|------------------|---------------|
| | | | Tons/annual average day | | | | |
| Tier I | | | | | | | |
| Light & Medium Trucks | 2000 | Inventory Reductions | 148.42 0.35 | 192.22 0.49 | 12.91 0.05 | 1880.77 4.45 | 24.18 0.08 |
| | | Inventory Reductions | 166.93 0.40 | 218.21 0.55 | 16.46 0.07 | 2149.06 5.08 | 28.06 0.09 |
| | 2010 | Inventory Reductions | 57.62 0.14 | 79.13 0.20 | 7.58 0.03 | 755.4 1.79 | 7.76 0.02 |
| | | Inventory Reductions | 92.48 0.22 | 110.52 0.28 | 10.29 0.04 | 1379.35 3.26 | 9.59 0.03 |
| Tier II | | | | | | | |
| Cars | 2000 | Inventory Reductions | 148.42 5.51 | 192.22 7.60 | 12.91 0.83 | 1880.77 69.66 | 24.18 1.19 |
| | | Inventory Reductions | 166.93 6.20 | 218.21 8.63 | 16.46 1.06 | 2149.06 79.59 | 28.06 1.38 |
| Light & Medium Trucks | 2000 | Inventory Reductions | 57.62 2.14 | 79.13 3.13 | 7.58 0.49 | 755.4 27.98 | 7.76 0.38 |
| | | Inventory Reductions | 92.48 3.44 | 110.52 4.37 | 10.29 0.66 | 1379.35 51.08 | 9.59 0.47 |

3. Goods Movement

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|-----------------------|---------------|------------|--------|--------------------|--------------------|---------|-------|
| Tier I | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 0.13 | 0.01 | 0.01 | 1.59 | 0.00 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 0.14 | 0.01 | 0.01 | 1.82 | 0.00 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Reductions | 0.05 | 0.01 | 0.01 | 0.64 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 0.08 | 0.01 | 0.01 | 1.17 | 0.00 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.8 |
| | | Reductions | 0.55 | 4.68 | 0.37 | 4.06 | 0.58 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Reductions | 0.72 | 5.50 | 0.44 | 4.38 | 0.62 |
| Trains | 2000 | Inventory | 8.38 | 32.55 | 3.56 | 15.08 | 1.88 |
| | | Reductions | -0.15 | -0.59 | -0.06 | -0.27 | -0.03 |
| | 2010 | Inventory | 9.92 | 38.8 | 4.24 | 17.95 | 2.24 |
| | | Reductions | -0.09 | -0.36 | -0.04 | -0.17 | -0.02 |

3. Goods Movement

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|-----------------------|---------------|------------|--------|--------------------|--------------------|---------|-------|
| Tier II | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 1.27 | 0.13 | 0.09 | 16.13 | 0.01 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 1.43 | 0.14 | 0.12 | 18.43 | 0.01 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Reductions | 0.49 | 0.05 | 0.05 | 6.48 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 0.79 | 0.07 | 0.07 | 11.83 | 0.00 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.8 |
| | | Reductions | 5.58 | 47.29 | 3.78 | 41.01 | 5.87 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Reductions | 7.31 | 55.58 | 4.43 | 44.29 | 6.23 |
| Trains | 2000 | Inventory | 8.38 | 32.55 | 3.56 | 15.08 | 1.88 |
| | | Reductions | -0.15 | -0.59 | -0.06 | -0.27 | -0.03 |
| | 2010 | Inventory | 9.92 | 38.8 | 4.24 | 17.95 | 2.24 |
| | | Reductions | -0.60 | -2.34 | -0.26 | -1.08 | -0.14 |

4. Traffic Flow Improvements

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|-----------------------|---------------|----------------|--------|--------------------|--------------------|---------|-------|
| Tier I | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Mean Reduction | 0.83 | 0.20 | 0.09 | 9.47 | 0.02 |
| | | Deviation* | 0.10 | 0.03 | 0.01 | 1.03 | 0.00 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Mean Reduction | 0.93 | 0.23 | 0.12 | 10.82 | 0.02 |
| | | Deviation* | 0.11 | 0.04 | 0.02 | 1.18 | 0.00 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Mean Reduction | 0.32 | 0.08 | 0.05 | 3.80 | 0.01 |
| | | Deviation* | 0.04 | 0.01 | 0.01 | 0.41 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Mean Reduction | 0.52 | 0.11 | 0.07 | 6.95 | 0.01 |
| | | Deviation* | 0.06 | 0.02 | 0.01 | 0.76 | 0.00 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.8 |
| | | Mean Reduction | 0.12 | 0.03 | 0.02 | 1.83 | 0.00 |
| | | Deviation* | 0.01 | 0.01 | 0.00 | 0.20 | 0.00 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Mean Reduction | 0.16 | 0.04 | 0.02 | 1.97 | 0.00 |
| | | Deviation* | 0.02 | 0.01 | 0.00 | 0.22 | 0.00 |

* For some measures emission reductions are expressed in a range by Mean and Deviation. Range of emission reductions is Mean +/- Deviation

4. Traffic Flow Improvements

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|-----------------------|---------------|----------------|--------|--------------------|--------------------|---------|-------|
| Tier II | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Mean Reduction | 2.49 | 0.60 | 0.28 | 28.41 | 0.05 |
| | | Deviation* | 0.29 | 0.10 | 0.04 | 3.10 | 0.01 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Mean Reduction | 2.80 | 0.68 | 0.36 | 32.46 | 0.06 |
| | | Deviation* | 0.33 | 0.12 | 0.05 | 3.54 | 0.01 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Mean Reduction | 0.97 | 0.25 | 0.16 | 11.41 | 0.02 |
| | | Deviation* | 0.11 | 0.04 | 0.02 | 1.24 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Mean Reduction | 1.55 | 0.34 | 0.22 | 20.84 | 0.02 |
| | | Deviation* | 0.18 | 0.06 | 0.03 | 2.27 | 0.00 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.8 |
| | | Mean Reduction | 0.37 | 0.10 | 0.05 | 5.48 | 0.01 |
| | | Deviation* | 0.04 | 0.02 | 0.01 | 0.60 | 0.00 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Mean Reduction | 0.48 | 0.11 | 0.06 | 5.92 | 0.01 |
| | | Deviation* | 0.06 | 0.02 | 0.01 | 0.65 | 0.00 |

* For some measures emission reductions are expressed in a range by Mean and Deviation. Range of emission reductions is Mean +/- Deviation

5. Nonrecurrent Congestion Relief

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|-----------------------|---------------|----------------|--------|--------------------|--------------------|---------|-------|
| Tier I | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Mean Reduction | 0.14 | 0.00 | 0.00 | 2.27 | 0.00 |
| | | Deviation* | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Mean Reduction | 0.16 | 0.00 | 0.01 | 2.59 | 0.00 |
| | | Deviation* | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Mean Reduction | 0.06 | 0.00 | 0.00 | 0.91 | 0.00 |
| | | Deviation* | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Mean Reduction | 0.09 | 0.00 | 0.00 | 1.66 | 0.00 |
| | | Deviation* | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.8 |
| | | Mean Reduction | 0.02 | 0.00 | 0.00 | 0.44 | 0.00 |
| | | Deviation* | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Mean Reduction | 0.03 | 0.00 | 0.00 | 0.47 | 0.00 |
| | | Deviation* | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |

* For some measures emission reductions are expressed in a range by Mean and Deviation. Range of emission reductions is Mean +/- Deviation.

5. Nonrecurrent Congestion Relief

| Source Category | Forecast Year | | ROG | NOX Tons/annual average day | SOX | CO | PM10 |
|-----------------------|---------------|----------------|--------|--------------------------------|-------|---------|-------|
| Tier II | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Mean Reduction | 0.43 | 0.00 | 0.01 | 6.80 | 0.01 |
| | | Deviation* | 0.00 | 0.11 | 0.00 | 0.01 | 0.00 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Mean Reduction | 0.49 | 0.00 | 0.02 | 7.77 | 0.01 |
| | | Deviation* | 0.00 | 0.12 | 0.00 | 0.01 | 0.00 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Mean Reduction | 0.17 | 0.00 | 0.01 | 2.73 | 0.00 |
| | | Deviation* | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Mean Reduction | 0.27 | 0.00 | 0.01 | 4.99 | 0.00 |
| | | Deviation* | 0.00 | 0.06 | 0.00 | 0.01 | 0.00 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.8 |
| | | Mean Reduction | 0.06 | 0.00 | 0.00 | 1.31 | 0.00 |
| | | Deviation* | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Mean Reduction | 0.08 | 0.00 | 0.00 | 1.42 | 0.00 |
| | | Deviation* | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 |

For some measures emission reductions are expressed in a range by Mean and Deviation. Range of emission reductions is Mean +/- Deviation.

6. Aircraft and Ground Service Vehicles

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|--------------------|------------------|------------|-------|--------------------|--------------------|--------|------|
| Tier I | | | | | | | |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 0.02 | 0.20 | 0.01 | 0.10 | 0.00 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 0.03 | 0.26 | 0.02 | 0.14 | 0.00 |
| Tier II | | | | | | | |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 0.21 | 1.77 | 0.13 | 0.93 | 0.02 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 0.31 | 2.35 | 0.17 | 1.25 | 0.03 |

7. Centralized Ground Power Systems

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|--------------------|------------------|------------|-------|--------------------|--------------------|--------|------|
| Tier I | | | | | | | |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 0.07 | 0.44 | 0.00 | 0.07 | 0.00 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 0.07 | 0.44 | 0.00 | 0.07 | 0.00 |
| Tier II | | | | | | | |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 0.02 | 0.15 | 0.00 | 0.02 | 0.00 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 0.02 | 0.15 | 0.00 | 0.02 | 0.00 |

8. Airport Ground Access

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|--------------------------|------------------|------------|--------|--------------------|--------------------|---------|-------|
| Tier I | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 0.09 | -0.01 | 0.00 | 1.37 | 0.00 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 0.10 | -0.01 | 0.00 | 1.58 | 0.00 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Reductions | 0.03 | 0.00 | 0.00 | 0.55 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 0.06 | 0.00 | 0.00 | 1.01 | 0.00 |
| Tier II | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 0.50 | -0.05 | 0.00 | 7.76 | 0.01 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 0.56 | -0.03 | 0.01 | 8.93 | 0.01 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Reductions | 0.19 | -0.02 | 0.00 | 3.12 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 0.31 | -0.01 | 0.01 | 5.73 | 0.00 |

9. Replacement of High Emitting Aircraft

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|--------------------|------------------|------------|-------|--------------------|--------------------|--------|-------|
| Tier I | | | | | | | |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 0.06 | 0.44 | 0.032 | 0.176 | 0.005 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 0.08 | 0.578 | 0.042 | 0.23 | 0.007 |
| Tier II | | | | | | | |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 0.58 | 3.96 | 0.288 | 1.584 | 0.045 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 0.76 | 5.202 | 0.378 | 2.07 | 0.063 |

10. General Aviation Vapor Recovery

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|--------------------|------------------|------------|-------|--------------------|--------------------|--------|------|
| Tier I | | | | | | | |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 0.05 | 0 | 0 | 0 | 0 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 0.05 | 0 | 0 | 0 | 0 |
| Tier II | | | | | | | |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 0.33 | 0 | 0 | 0 | 0 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 0.37 | 0 | 0 | 0 | 0 |

11. Rail Consolidation to Reduce Grade Crossings

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO average day | PM10 |
|-----------------------|---------------|------------|--------|--------------------|--------------------|-------------------|-------|
| Tier I | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 0.01 | 0.00 | 0.00 | 0.11 | 0.00 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 0.01 | 0.00 | 0.00 | 0.21 | 0.00 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.07 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 0.01 | 0.00 | 0.00 | 0.14 | 0.00 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.8 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 |
| Trains | 2000 | Inventory | 8.38 | 32.55 | 3.56 | 15.08 | 1.88 |
| | | Reductions | 0.04 | 0.15 | 0.02 | 0.07 | 0.01 |
| | 2010 | Inventory | 9.92 | 38.8 | 4.24 | 17.95 | 2.24 |
| | | Reductions | 0.06 | 0.23 | 0.02 | 0.10 | 0.01 |

11. Rail Consolidation to Reduce Grade Crossings

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|-----------------------|---------------|------------|--------|--------------------|--------------------|---------|-------|
| Tier II | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 0.34 | -0.08 | 0.01 | 5.34 | 0.01 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 0.66 | -0.16 | 0.02 | 10.37 | 0.01 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Reductions | 0.19 | -0.04 | 0.01 | 3.43 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 0.36 | -0.08 | 0.01 | 6.65 | 0.00 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.8 |
| | | Reductions | 0.12 | -0.09 | 0.01 | 0.90 | 0.00 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Reductions | 0.23 | -0.17 | 0.01 | 1.74 | 0.01 |
| Trains | 2000 | Inventory | 8.38 | 32.55 | 3.56 | 15.08 | 1.88 |
| | | Reductions | 1.95 | 7.57 | 0.83 | 3.51 | 0.44 |
| | 2010 | Inventory | 9.92 | 38.8 | 4.24 | 17.95 | 2.24 |
| | | Reductions | 2.83 | 11.07 | 1.21 | 5.12 | 0.64 |

12. Paved and Unpaved Roads and Parking Lots

| Source Category | Forecast Year | | ROG | NOX | SOX | CO | PM10 |
|-----------------------------|---------------|------------|-------------------------|-----|-----|----|--------|
| | | | Tons/annual average day | | | | |
| Tier I | | | | | | | |
| Entrained Road Dust Paved | 2000 | Inventory | 0 | 0 | 0 | 0 | 646.01 |
| | | Reductions | 0 | 0 | 0 | 0 | 25.17 |
| | 2010 | Inventory | 0 | 0 | 0 | 0 | 696.52 |
| | | Reductions | 0 | 0 | 0 | 0 | 27.14 |
| Entrained Road Dust Unpaved | 2000 | Inventory | 0 | 0 | 0 | 0 | 59.82 |
| | | Reductions | 0 | 0 | 0 | 0 | 2.33 |
| | 2010 | Inventory | 0 | 0 | 0 | 0 | 67.66 |
| | | Reductions | 0 | 0 | 0 | 0 | 2.64 |
| Tier II | | | | | | | |
| Entrained Road Dust Paved | 2000 | Inventory | 0 | 0 | 0 | 0 | 646.01 |
| | | Reductions | 0 | 0 | 0 | 0 | 142.61 |
| | 2010 | Inventory | 0 | 0 | 0 | 0 | 696.52 |
| | | Reductions | 0 | 0 | 0 | 0 | 153.77 |
| Entrained Road Dust Unpaved | 2000 | Inventory | 0 | 0 | 0 | 0 | 59.82 |
| | | Reductions | 0 | 0 | 0 | 0 | 34.88 |
| | 2010 | Inventory | 0 | 0 | 0 | 0 | 67.66 |
| | | Reductions | 0 | 0 | 0 | 0 | 39.45 |

13. Freeway Capacity Enhancements

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO average day | PM10 |
|-----------------------|---------------|----------------------|----------------|--------------------|--------------------|-------------------|---------------|
| Tier I | | | | | | | |
| Cars | 2000 | Inventory Reductions | 148.42 2.07 | 192.22 1.87 | 12.91 0.36 | 1880.77 22.26 | 24.18 0.30 |
| | 2010 | Inventory Reductions | 166.93 2.32 | 218.21 2.12 | 16.46 0.46 | 2149.06 25.44 | 28.06 0.35 |
| Light & Medium Trucks | 2000 | Inventory Reductions | 57.62 0.80 | 79.13 0.77 | 7.58 0.21 | 755.4 8.94 | 7.76 0.10 |
| | 2010 | Inventory Reductions | 92.48 1.29 | 110.52 1.07 | 10.29 0.29 | 1379.35 16.33 | 9.59 0.12 |
| Heavy Duty Vehicles | 2000 | Inventory Reductions | 45.24 0.63 | 203.37 1.98 | 11.38 0.32 | 334.65 3.96 | 15.8 0.20 |
| | 2010 | Inventory Reductions | 59.32 0.83 | 239.03 2.32 | 13.34 0.37 | 361.45 4.28 | 16.75 0.21 |
| Tier II | | | | | | | |
| Cars | 2000 | Inventory Reductions | 148.42 6.20 | 192.22 5.61 | 12.91 1.08 | 1880.77 66.78 | 24.18 0.91 |
| | 2010 | Inventory Reductions | 166.93 6.97 | 218.21 6.37 | 16.46 1.38 | 2149.06 76.31 | 28.06 1.06 |
| Light & Medium Trucks | 2000 | Inventory Reductions | 57.62 2.41 | 79.13 2.31 | 7.58 0.63 | 755.4 26.82 | 7.76 0.29 |
| | 2010 | Inventory Reductions | 92.48 3.86 | 110.52 3.22 | 10.29 0.86 | 1379.35 48.98 | 9.59 0.36 |
| Heavy Duty Vehicles | 2000 | Inventory Reductions | 45.24 1.89 | 203.37 5.93 | 11.38 0.95 | 334.65 11.88 | 15.8 0.60 |
| | 2010 | Inventory Reductions | 59.32 2.48 | 239.03 6.97 | 13.34 1.12 | 361.45 12.83 | 16.75 0.63 |

14. Railroad Electrification

| Source Category | Forecast Year | | ROG | NOX | SOX | CO | PM10 |
|--------------------|------------------|------------|-------------------------|-------|------|-------|------|
| | | | Tons/annual average day | | | | |
| | | | Tier II | | | | |
| Trains | 2000 | Inventory | 8.38 | 32.55 | 3.56 | 15.08 | 1.88 |
| | | Reductions | 4.19 | 16.28 | 1.78 | 7.54 | 0.94 |
| | 2010 | Inventory | 9.92 | 38.8 | 4.24 | 17.95 | 2.24 |
| | | Reductions | 8.93 | 34.92 | 3.82 | 16.16 | 2.02 |

15. Electric Vehicles

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO average day | PM10 |
|--------------------------|------------------|------------|--------|--------------------|--------------------|-------------------|-------|
| Tier II | | | | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 0.69 | 0.89 | 0.06 | 8.73 | 0.11 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 5.61 | 7.34 | 0.55 | 72.25 | 0.94 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Reductions | 2.43 | 3.34 | 0.32 | 31.88 | 0.33 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 11.12 | 13.29 | 1.24 | 165.81 | 1.15 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.8 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Reductions | 1.43 | 5.78 | 0.32 | 8.74 | 0.40 |

16. Highway Electrification and Automation

| Source Category | Forecast Year | | ROG | NOX | SOX | CO | PM10 |
|-----------------------|---------------|------------|-------------------------|--------|-------|---------|-------|
| | | | Tons/annual average day | | | | |
| | | | Tiers I & II | | | | |
| Cars | 2000 | Inventory | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Light & Medium Trucks | 2000 | Inventory | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Heavy Duty Vehicles | 2000 | Inventory | 45.24 | 203.37 | 11.38 | 334.65 | 15.8 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 59.32 | 239.03 | 13.34 | 361.45 | 16.75 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

*Highway electrification is not expected to be commercialized by the year 2010 to have any emission impact.

17. High Speed Rail

| Source Category | Forecast Year | | ROG | NOX | SOX | CO | PM10 |
|--------------------|------------------|------------|-------------------------|-------|------|--------|------|
| | | | Tons/annual average day | | | | |
| | | | Tier II | | | | |
| Aircraft | 2000 | Inventory | 21.79 | 16.02 | 1.44 | 97.04 | 0.96 |
| | | Reductions | 1.91 | 3.40 | 0.41 | 12.10 | 0.31 |
| | 2010 | Inventory | 25.44 | 18.07 | 1.63 | 112.02 | 1.09 |
| | | Reductions | 2.23 | 3.83 | 0.47 | 13.97 | 0.36 |
| Trains | 2000 | Inventory | 8.38 | 32.55 | 3.56 | 15.08 | 1.88 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 9.92 | 38.8 | 4.24 | 17.95 | 2.24 |
| | | Reductions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

* Note: Assumes displacement of air traffic only. Does not affect projected train traffic.

18. Growth Management

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|-----------------------|---------------|----------------------|--------|--------------------|--------------------|---------|-------|
| Tier I | | | | | | | |
| Cars | 2000 | Inventory Reductions | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | | 1.06 | 0.78 | 0.18 | 11.22 | 0.12 |
| | 2010 | Inventory Reductions | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | | 1.20 | 0.89 | 0.23 | 12.82 | 0.13 |
| Light & Medium Trucks | 2000 | Inventory Reductions | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | | 0.41 | 0.32 | 0.10 | 4.51 | 0.04 |
| | 2010 | Inventory Reductions | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | | 0.66 | 0.45 | 0.14 | 8.23 | 0.05 |
| Tier II | | | | | | | |
| Cars | 2000 | Inventory Reductions | 148.42 | 192.22 | 12.91 | 1880.77 | 24.18 |
| | | | 25.53 | 18.72 | 4.29 | 269.20 | 2.77 |
| | 2010 | Inventory Reductions | 166.93 | 218.21 | 16.46 | 2149.06 | 28.06 |
| | | | 28.71 | 21.25 | 5.47 | 307.60 | 3.22 |
| Light & Medium Trucks | 2000 | Inventory Reductions | 57.62 | 79.13 | 7.58 | 755.4 | 7.76 |
| | | | 9.91 | 7.70 | 2.52 | 108.12 | 0.89 |
| | 2010 | Inventory Reductions | 92.48 | 110.52 | 10.29 | 1379.35 | 9.59 |
| | | | 15.91 | 10.76 | 3.42 | 197.43 | 1.10 |

19. Energy Conservation

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average day | CO | PM10 |
|------------------------------------|---------------|----------------------|---------------|--------------------|--------------------|---------------|--------------|
| Tier I | | | | | | | |
| Fuel Combustion Other Mfg./Ind. | 2000 | Inventory Reductions | 3.27 0.00 | 39.35 0.10 | 1.64 0.00 | 14.33 0.00 | 1.57 0.00 |
| | 2010 | Inventory Reductions | 3.38 0.00 | 40.79 0.20 | 1.71 0.00 | 14.88 0.00 | 1.63 0.00 |
| Fuel Combustion Electric Util. | 2000 | Inventory Reductions | 2.25 0.00 | 43.34 0.06 | 8.3 0.01 | 7.22 0.01 | 1.97 0.00 |
| | 2010 | Inventory Reductions | 2.27 0.00 | 45.9 0.06 | 8.14 0.01 | 7.34 0.01 | 1.97 0.00 |
| Fuel Combustion Other Ser & Com | 2000 | Inventory Reductions | 3.15 0.01 | 40.18 0.16 | 6.71 0.00 | 16.16 0.03 | 2.37 0.00 |
| | 2010 | Inventory Reductions | 3.54 0.01 | 46.92 0.25 | 7.87 0.00 | 18.33 0.05 | 2.77 0.00 |
| Fuel Combustion Residential | 2000 | Inventory Reductions | 1.77 0.02 | 28.71 0.38 | 0.97 0.00 | 16.59 0.09 | 1.96 0.01 |
| | 2010 | Inventory Reductions | 2.04 0.03 | 32.43 0.59 | 1.10 0.00 | 19.14 0.13 | 2.26 0.01 |
| <hr/> | | | | | | | |
| Fuel Combustion Total | 2000 | Inventory Reductions | 10.44 0.03 | 151.58 0.70 | 17.62 0.01 | 54.30 0.13 | 7.87 0.01 |
| | 2010 | Inventory Reductions | 11.23 0.05 | 166.04 1.10 | 18.82 0.01 | 59.69 0.19 | 8.63 0.02 |

19. Energy Conservation

| Source Category | Forecast Year | | ROG | NOX Tons/annual | SOX average | CO day | PM10 |
|------------------------------------|------------------|------------|-------|--------------------|----------------|-----------|------|
| Tier II | | | | | | | |
| Fuel Combustion Other Mfg./Ind. | 2000 | Inventory | 3.27 | 39.35 | 1.64 | 14.33 | 1.57 |
| | | Reductions | 0.00 | 0.39 | 0.00 | 0.00 | 0.00 |
| | 2010 | Inventory | 3.38 | 40.79 | 1.71 | 14.88 | 1.63 |
| | | Reductions | 0.00 | 0.82 | 0.00 | 0.00 | 0.00 |
| Fuel Combustion Electric Util. | 2000 | Inventory | 2.25 | 43.34 | 8.3 | 7.22 | 1.97 |
| | | Reductions | 0.02 | 0.37 | 0.07 | 0.06 | 0.02 |
| | 2010 | Inventory | 2.27 | 45.9 | 8.14 | 7.34 | 1.97 |
| | | Reductions | 0.02 | 0.37 | 0.07 | 0.06 | 0.02 |
| Fuel Combustion Other Ser & Com | 2000 | Inventory | 3.15 | 40.18 | 6.71 | 16.16 | 2.37 |
| | | Reductions | 0.04 | 0.90 | 0.00 | 0.17 | 0.02 |
| | 2010 | Inventory | 3.54 | 46.92 | 7.87 | 18.33 | 2.77 |
| | | Reductions | 0.07 | 1.44 | 0.01 | 0.26 | 0.03 |
| Fuel Combustion Residential | 2000 | Inventory | 1.77 | 28.71 | 0.97 | 16.59 | 1.96 |
| | | Reductions | 0.13 | 2.14 | 0.00 | 0.48 | 0.03 |
| | 2010 | Inventory | 2.04 | 32.43 | 1.10 | 19.14 | 2.26 |
| | | Reductions | 0.20 | 3.32 | 0.00 | 0.75 | 0.05 |
| <hr/> | | | | | | | |
| Fuel Combustion Total | 2000 | Inventory | 10.44 | 151.58 | 17.62 | 54.30 | 7.87 |
| | | Reductions | 0.19 | 3.80 | 0.07 | 0.71 | 0.07 |
| | 2010 | Inventory | 11.23 | 166.04 | 18.82 | 59.69 | 8.63 |
| | | Reductions | 0.28 | 5.94 | 0.08 | 1.07 | 0.09 |



VI. METHODOLOGY

METHODOLOGY

Introduction

Emissions from mobile sources may be reduced at the tailpipe and by changes in vehicle use. Transportation and land-use control measures address vehicle use through travel indicators, such as vehicle miles traveled (VMT), vehicle trips (VT), and vehicle hours of travel (VHT). Control measures which reduce VMT, trips, and VHT through better transportation demand management and system management have a direct impact on emissions. Land-use controls, such as indirect source requirements and efforts to improve the balance between jobs and housing, also impact travel indicators, and as such, are also effective at reducing emissions.

The emission reductions projected from control measure implementation are calculated according to specific groupings of those measures which work in concert. The measures are divided and emissions reductions calculated according to subgroups which work together synergistically, i.e., all ridesharing strategies. Quantification of reductions by group, as opposed to each measure individually, prevents double credits from being taken.

Development of the Growth Management (GMP), Mobility (RMP), Housing (RHNA) and Air Quality Plans (AQMP) has been coordinated to ensure consistency of approach and methodology. While AQMP development parallels that of the RMP, the AQMP measures encompass more tactics for air emission reductions than those designed to achieve the regional mobility goals.

Activity Indicators

In order to calculate emission reductions, the following quantifiable variables or transportation indicators, that characterize the emission impacts of transportation and land use measures were identified. Changes in these variables represent the level of activity changes.

Number of Vehicle Trips (VT)
Number of Vehicle Miles Traveled (VMT),
Number of Vehicle Hours Traveled (VHT).

For Energy Conservation measures, the most significant activity indicator impacting emissions is fuel consumption.

Transportation and Land Use Measures

Of the eighteen groups (some groups may consist of just one measure) of Transportation and Land Use measures, four originated as RMP strategies, and thus were well supported by model data. This data formed the basis of the regression relationship developed for emission calculations for all Transportation and Land-Use measures.

Where separate quantification of individual measures was inappropriate because of the synergistic effects, emission benefits were calculated for groups of measures that reinforce each other.

Measures in RMP Strategies

Air pollutant emissions of Reactive Organic Gases (ROG), Oxides of Nitrogen (NOx), Oxides of Sulfur (SOx), Carbon Monoxide (CO), and Particulate Matter of size smaller than 10 microns in diameter (PM10) were expressed by regression equations using the three transportation indicator variables (VT,VMT,VHT). The regression equations developed from the analysis showed that the indicator variables explained better than 99.9% of variations in emissions (high values of 'F Statistics').

The data used for regression analysis came from the RMP Transportation model runs, and from Direct Travel Impact Model (DTIM) runs for the four strategies and three peak periods. The emission calculations were based on the most recent ARB emission factors generated by the emission factor program EMFAC7D.

The emission data generated by DTIM needed several adjustments that are listed below.

- o The Total Organic Gases (TOG), and Total Suspended Particulate (TSP) data were converted to ROG and PM10 respectively, using factors obtained from ARB.

- o SOx emissions were calculated from the data on Sulfur content of fuels in the South Coast Air Basin.

- o Heavy Duty Vehicle emissions were estimated using BURDEN factors obtained from ARB.

- o Inspection & Maintenance (I&M) credits of 12.3% for TOG, 9.8% for CO, and 3.9% for NOX were used to reflect the impact of existing I&M program in the year 2010.

- o South Coast Air Basin (SCAB) portion of data was extracted from SCAG modeling region data by excluding data pertinent to those Regional Statistical Areas (RSAs) in the SCAG modeling region that did not belong to SCAB.

Attribution of Indicator Variables

SCAG Transportation and Modeling staff assigned the Vehicle Trips (VT) to individual or groups of measures using the sensitivity runs that were made during RMP development and the adjusted trip tables from the model runs of RMP strategies.

The Vehicle Miles Traveled (VMT) were estimated by multiplying VT by average trip distance in each of the AM and PM peak periods and the off peak period.

The Vehicle Hours Traveled (VHT) were calculated by applying the BPR formula:

$$T = T_0 * [1 + 0.15 * (V / C) ** 4]$$

where, T = VHT at demand VT;
T₀ = VHT at free flow traffic;
V = Demand VT;
C = Capacity expressed as VT.

Measures not in RMP Strategies:

The equations developed for measures in the Regional Mobility Plan were used to calculate emission impacts of transportation-related measures such as Goods Movements, Traffic Flow Improvements, Nonrecurrent Congestion Relief, Airport Ground Access, and Rail Consolidation, which are not in the RMP.

Heavy duty vehicle emission reductions were scaled using the ratio of heavy duty emissions to light duty emissions for the same vehicle miles traveled.

For aircraft measures, emission calculations were based on the Environmental Protection Agency publication "Compilation of Air Pollutant Emission Factors" (AP-42) and other data from EPA & Federal Aviation Administration.

For Paved Roads, reported emission reductions are the direct result of total VMT reductions achieved through all the other measures. For Unpaved Roads, emission reductions are the net result of both VMT reduction and paving.

For the Electric Vehicle measure, penetration rates of electric vehicles in the overall fleet, as forecast in the measure, were used to proportionately reduce all emissions. The measure assumes that there would be zero emissions from the operation and use of electric vehicles, and there would be no net increase in power generation emissions in the basin.

Energy Conservation Measures

Emission reductions for the Energy Conservation Measures were calculated as proportional to reductions in fuel use. Gas or liquid hydrocarbon fuels conserved as a result of implementing the measure were directly converted into emission reductions using AP-42 emission factors. The use of recycling (glass & paper) to lower average specific energy consumption of feedstock, and the use of pricing incentives to encourage more efficient energy consumption patterns were similarly converted into equivalent savings in fuel and then to emission reductions.



VII. FUTURE STUDY ISSUES

FUTURE STUDY ISSUES

User Fees

One additional measure is carried forward for future study. Additional research is planned into the feasibility and cost of the following:

USER FEES

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SUMMARY

SOURCE CATEGORY: Light Duty Auto; Light, Medium Duty Truck; Heavy Duty Truck

CONTROL METHODS: TIER I

- o Conduct planning studies, identify techniques and candidate locations for pilot demonstration and evaluation, 1989-91.
- o Develop user fee demonstration program.
- o Advocate state legislation to pursue gas tax funding by 1989.

TIER II

- o Implement peak period pricing programs, such as roadway pricing and/or congestion charges differentiated by time of day, toll structure differentiated by auto occupancy, and transit fare reform.
- o Complete coordinated research, and advocate legislation to increase user fees to a level necessary to finance RMP improvements that benefit air quality.

IMPLEMENTING

AGENCIES: Federal, state, and/or county government; vote of people may be required, FHWA, Caltrans, transit operators, and SCAQMD.

IMPLEMENTATION ASSUMPTIONS FOR ALL ALTERNATIVE WORK STRATEGIES:

Legislative, Administrative prohibitions can be resolved.

PRIMARY BENEFIT: Increased funding and possible reduction or shifting of demand for peak period single occupant auto travel.

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DESCRIPTION OF SOURCE CATEGORY AND CONTROL MEASURE

Background

Automobiles account for 96 percent of all person-trips in the SCAG region. Even with an extremely aggressive program to expand transit usage it is currently estimated that 80-85% of trips would still be by auto. Peak period congestion is one of the most visible problems affecting the region's urban highway system and is growing. This congestion decreases personal mobility and leads to the further deterioration of regional air quality.

User fees provide an economic approach to inducing shifts in the time of travel and in the mode of travel to help alleviate peak commuter period congestion problems. Increasing gasoline taxes above levels to fund needed transportation improvements will increase the out-of-pocket cost of single occupant auto use and provide an incentive to shift to other modes. Peak period pricing programs will increase the cost of travel by charging a user fee "premium" to use transportation facilities and services during the period of highest use. Such changes are not currently allowed under federal law/regulation. FHWA may be open to selectively exempting some roadway sections to allow road-pricing programs to demonstrate their feasibility.

Regulatory History

Gasoline taxes and other driver/vehicle user fees are currently charged. The most recent federal gas tax increase in 1986 provided a cross-subsidization of transit. This was the first time that highway user fees were earmarked to support transit.

Peak period charges have been applied in the Singapore central business district. Road-use charges in California have been applied by Caltrans at toll bridges only. Examples are the Vincent Thomas Bridge, the San Francisco-Oakland Bay Bridge, and the San Diego-Coronado Bridge. The SF-Oakland Bay Bridge does not charge a fee to ridesharers. Tolls can be used on locally-controlled facilities in order to pay off bonded indebtedness. Once the facility is fully paid for, the facility can be turned over to the state for continued operation and maintenance (without the toll). Orange County has recently, through state and federal legislation, been permitted to develop such facilities. Toll roads are very common in other parts of the country.

Road pricing tactics have been implemented on an experimental basis in Singapore. A computerized system monitors road use and calculates charges for every vehicle operating on a specific highway within a selected district. A vehicle owner is billed for road use just as any other utility.

METHODS OF CONTROL

Tier I

- o Conduct planning studies on user fees (e.g., congestion charges, peak period charges, tolls, emission fees, other), including the identification of candidate locations for pilot testing or demonstration, application techniques, and impacts.
- o Develop user fee pilot testing/demonstration program. Choose appropriate application technique(s), select application technology(ies), develop cost/funding components, select locations(s), and implement test/demonstration(s).
- o Advocate State legislation by 1989 to pursue gas tax funding.

Tier II

- o Apply peak period user fees to the entire freeway system, although the program would need to be implemented gradually following successful demonstration projects which show public benefit. Congestion charges would be facility and time of day specific. Fees could be graduated to encourage multi-occupant and/or off-peak travel. Road pricing technologies need further evaluation, but the options include stickers/permits, toll-plaza, and AVI (Automatic Vehicle Identification) system. AVI consists of an electronic device which records where and when a trip was made. A car owner would receive a bill for peak hour road use just as he gets bills for other utility services.

Charging highway tolls and/or a toll structure differentiated by auto occupancy (perhaps by time of day and location as well) would be an adjunct program to the peak period pricing program. Just as the SF-Oakland Bay Bridge waives the fee to ridesharers, congestion charges would be lowered or eliminated for high occupancy vehicles. This program will only work with non-automated road pricing technologies where verification of auto-occupancy is possible.

Transit systems have significant problems with peak period crowding. Peak period transit fare reform must be carefully applied in conjunction with expanded transit service so as to capture the highest number of transit patrons without discouraging ridership.

- o Complete coordinated research and advocate legislation to increase gasoline taxes to a level necessary to finance Regional Mobility Plan improvements which benefit air quality. The revenue raised will be earmarked to partially subsidize transit and ridesharing programs. Theoretically, the increase in gas taxes would in and of themselves increase the cost of single-occupant vehicles, resulting in an economic disincentive to drive alone. However, with the rising costs of transit and ridesharing programs, the subsidization of these modes with the increased gas tax would be needed to maintain services that will attract the potential mode shifter.

Gasoline tax increase are primarily considered as a method to raise revenues to finance funding shortfalls. The financial analysis of alternative strategies for the Regional Mobility Plan includes gas tax includes gas tax increases for each of the 4 strategies evaluated. For Strategy 3 (TDM emphasis), a state gas tax increase (one of several revenue raising mechanisms utilized) of \$.08 per gallon is needed for funding part of the revenue shortfall which exists in capital, operating, and maintenance programs. To utilize the state gas tax as a mode-shift mechanism in this instance, the gas tax increase would need to go beyond the \$.08 level.

EMISSIONS REDUCTION

Undetermined

COST EFFECTIVENESS

Undetermined

OTHER IMPACTS

Increase in gas tax would encourage conservation of fuel. Peak period pricing would result in decreased delays (time costs), users operating costs, and fuel consumption. The total cost of congestion is even higher when commuter stress, workers diminished efficiency and productivity costs are added. In addition, there would be a public cost associated with administering and implementing various user fee mechanisms.

LEGISLATIVE/RESEARCH NEEDS

Gas tax increases will require legislation and voter action (Gann Limit). Programs for legislative action at the federal, state, and local levels with the appropriate public outreach effort will need be be developed and phased. Peak period, congestion pricing methods as well as facility specific toll programs will require feasibility studies and demonstration projects to select roadway pricing technology and to determine fee structures. The potential application of new technology, such as AVI, could be explored through pilot projects. The proposed Orange County Toll Road would be an inviting candidate to test technology, fee structure, and impacts of road pricing on time and mode of travel.

IMPLEMENTING AGENCIES

Numerous agencies would need to be involved in the implementation of user fees. The gas tax increase would involve the appropriate transportation authority at the federal, state, and local government levels. Congestion pricing would involve FHWA, Caltrans, and transit operators (fare reform). Legislation would probably be needed. The SCAQMD may need to adopt a new regulation to implement peak hour congestion charges.

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AQMP COMMITMENT SCHEDULE

MEASURE :

USER FEES

FURTHER STUDY

COMMITMENT

| ACTION | | EXAMPLES | SCHEDULE | | |
|---------------------|---|--|------------|---------|----------|
| | | | TIER I | TIER II | TIER III |
| ENABLE | ↑ EXISTING LOCAL GOVERNMENT OPTIONS ↓ | ○ GENERAL PLANS ○ RHNA | | | |
| FACILITATE | | ○ FAST TRACK ○ BONUS DENSITIES ○ A-95 | | | |
| LOCAL REGs. | | ○ ZONING ○ BUS. LICENSES ○ ACTIONS AS AN EMPLOYER & CONTRACTOR | | | |
| ASSIST | | ○ REDEVEL. \$ ○ ENTERPRISE ZONES ○ TRANSIT \$ | ### | | |
| AGREEMENTS | ↑ COOPERATIVE PARTNERSHIPS ↓ FORGED | ○ MOU'S & JPA's | | | |
| LEGISLATION | | ○ INCREASE \$ ○ NEW AUTHORITIES | ### ### | | |
| REGIONAL REGULATION | ↓ TOP DOWN CONTROL | ○ SCAQMD ○ SEWER ALLOCATIONS ○ GAS RATIONING (EPA) | ### | | |

TIER I ACTIONS SUMMARIZED:

- SCAG evaluate implementation of user fees, 1989-91.
- Develop demonstration program, 1991-1993.
- Advocate legislation at State level to pursue gas tax funding by 1989.

Cost/Benefit Analysis

Cost information on measure implementation is provided where available, but should be treated with caution. These costs do not always portray cost associated with emission reductions.

Proper cost benefit analysis would require more detailed study than was envisioned for the purposes of this document.

Decision makers often choose measures for implementation from a priority list that would rank these measures on the basis of cost effectiveness.

Since implementation of all measures is necessary to achieve attainment of the standards, it may not be possible to choose or reject any measure based on its cost effectiveness.

Further, much of the cost of transportation measures is attributed to construction of facilities for the purpose of congestion relief.

It would be incorrect to infer cost effectiveness of a transportation measure based on total cost of implementing projects called for by that measure.

If the decision to implement a measure is based solely on achieving air quality improvement, then all of the cost of implementing that measure can be attributed to air quality.

Local Air Quality Elements

SCAG and the SCAQMD are developing guidelines for local jurisdictions to use in preparing Air Quality Elements. The counties of San Bernardino, Riverside, and Orange are in the initial stages of preparing such Elements for their General Plans.

A significant link exists between this program, AQMP Conformity Review, and the annual Reasonable Further Progress (RFP) audit, in that each program serves to reinforce and act as a check on the other. The adoption of Air Elements in the region is seen in this AQMP as critical to full and effective implementation of Transportation, Land-use, and Energy Conservation-control measures. The real effectiveness of these Elements will depend on how specifically they establish programs that implement the 1988 AQMP.

Reasonable Further Progress

The annual Reasonable Further Progress audit of local government air quality programs will be redesigned to track the commitments called for under the new Plan.

AQMP CONFORMITY REVIEW PROCEDURES

INTRODUCTION

The primary purpose of the State Implementation Plan (SIP)/Air Quality Management Plan (AQMP) is to assist the basin in attaining the National Ambient Air Quality Standards (NAAQS). Conformity review is essential to this task by ensuring that governmental actions and projects (ie. plan, action, permit activity, project approval, support, program, or funding) do not prevent attainment.

The federal Clean Air Act (CAA) specifies conformity review in section 176(c). This section requires all federal actions to conform to the SIP/AQMP, and prohibits all Metropolitan Planning Organizations (MPO) from approving any federal actions that do not conform. Furthermore, the act states that "the assurance of conformity...shall be an affirmative responsibility" of the head of the metropolitan planning agency. However, in order to meet the NAAQS in the South Coast Air Basin, it is necessary to ensure that state and local actions are consistent with the SIP/AQMP as well. Therefore, conformity review with the AQMP should be required of all governmental actions, at all levels.

The conformity issue was first addressed in 1981 when the EPA published criteria for approval of 1982 plan revisions (46FR7182). The policy required plans to include administrative and technical procedures, and agency responsibilities for ensuring that transportation plans, programs, and projects are in conformance with the SIP/AQMP. The policy also called for federal agencies to establish conformity criteria and procedures for their actions. The 1982 AQMP Revision addressed the issue of conformity of growth-inducing proposals, wastewater treatment and transportation facilities. The procedures were comprised of a series of questions to evaluate whether a project conformed to the plan. The evaluation was limited to those projects which were of regional significance (as determined in the A-95 Clearinghouse Review Process Handbook).

Early in 1988, EPA amended the conformity guidelines and released them in draft form. In the document, EPA states that it is more concerned now with conformity of federal actions than in 1981, since the statutory deadline for meeting national standards has passed, and federal activities have contributed to development and growth patterns which exacerbate air pollution.

Several important changes are needed in the conformity procedures called out in the 1982 AQMP revision in order to address these concerns. A draft conformity section has been prepared for the 1988 AQMP Revision, incorporating these changes as discussed in the following section.

CONFORMITY PROCESS

There are three (3) separate components to the conformity process: growth and development, wastewater treatment facilities, and transportation. Each

proposed project is evaluated under the component or components that are applicable. There are several benefits to this method of organization of the conformity process. All the projects can be reviewed for consistency with the growth projections. An in-depth evaluation is possible for wastewater treatment facilities and transportation projects which are substantial growth inducers and sources of mobile emissions. The process makes it easier to pinpoint the specific areas in which the project is found to be inconsistent, and develop and test suitable mitigation measures.

The conformity review process is expected to take place in conjunction with the California Environmental Quality Act (CEQA) analysis process. The level and depth of review a project will undergo to determine conformity with the AQMP is linked to the size of the project (whether it is of local or regional significance) local projects would not be reviewed individually, but rather the cumulative impacts of numerous local projects would be evaluated. Individual regional projects would be reviewed with the conformity criteria. Each component (growth and development, wastewater treatment facilities, and transportation) specifies the process for determining conformity and the responsibilities of governmental entities associated with the review process based on the level of review.

Only the significant aspects of the growth and development component are discussed in this document. During the review period for the draft 1988 AQMP Revision, the draft conformity review procedures, including the other two components will be released for public comment.

GOALS AND OBJECTIVES

The goals and objectives of the conformity process are as follows:

- o Maintenance of the Lead Agency's responsibility for making the final conformity determination.
- o Provision of incentives to local governments which adopt Air Quality Elements by considering these jurisdictions to be actively implementing the AQMP and thus, requiring less stringent review of their projects.
- o Provision of disincentives to Lead Agencies which approve projects when there is evidence it will be contrary to the objectives of the AQMP, by developing federal and state priority funding lists for projects which are consistent with the AQMP.
- o Coordination of the CEQA Process, the monitoring process for the AQMP, and the conformity procedures so that they operate in a supportive manner of each other and duplication of effort does not occur.
- o Establishment of a cohesive effort between the lead agency, the local jurisdiction, SCAQMD, and SCAG.

- o Establishment of standards for the mitigation of VMT and VT.

ELEMENTS OF CONFORMITY PROCESS

There are three elements of the process, Cumulative Impact Reports, the Monitoring Committee, and the conformity criteria, all of which play important roles in determining conformity.

Cumulative Impact Reports

In order to assess the impacts of cumulative development on air quality, cumulative impact reporting should be required of each local government. The report would contain information on the number and type of projects approved, and the CEQA determination and conformity analysis if it is a regional project. The report will be used to assess the impact of cumulative development on an annual basis for each regional statistical area (RSA) and jurisdiction. This type of report is vital in determining whether the cumulative impacts of a proposed project and other developments within the area would exceed the growth projections of population, employment, and housing, or the level of implementation assumed for vehicle miles traveled and vehicle trips.

Monitoring Committee

A technical committee made up of representatives from SCAQMD, SCAG, EPA, ARB, Caltrans, Sanitation Districts, Regional Water Quality Control Boards, local government, major transit operators, major airport operators, Southern California Gas, Southern California Edison, and Commuter Computer, would establish the method of monitoring each control measure. The committee would review local government and other plan implementation reports and make annual recommendations to SCAG's Executive Committee regarding plan implementation.

Conformity Criteria

The conformity criteria are intended to demonstrate that a project's direct or indirect emissions will not hinder progress towards attainment of the NAAQS. In order for the Basin to meet federal air quality standards, the conformity criteria must be structured to ensure that growth does not occur beyond what is projected in the plan and that vehicle miles traveled and vehicle trips are reduced from the baseline level to the level assumed in the air plan's implementation scenario. Since a project would not exceed the growth projections, project mitigation would be directed at reducing the project's vehicle miles traveled and vehicle trips instead of population growth as in the 1982 AQMP Revision.

The primary conformity criteria for the growth and development component are proposed as follows:

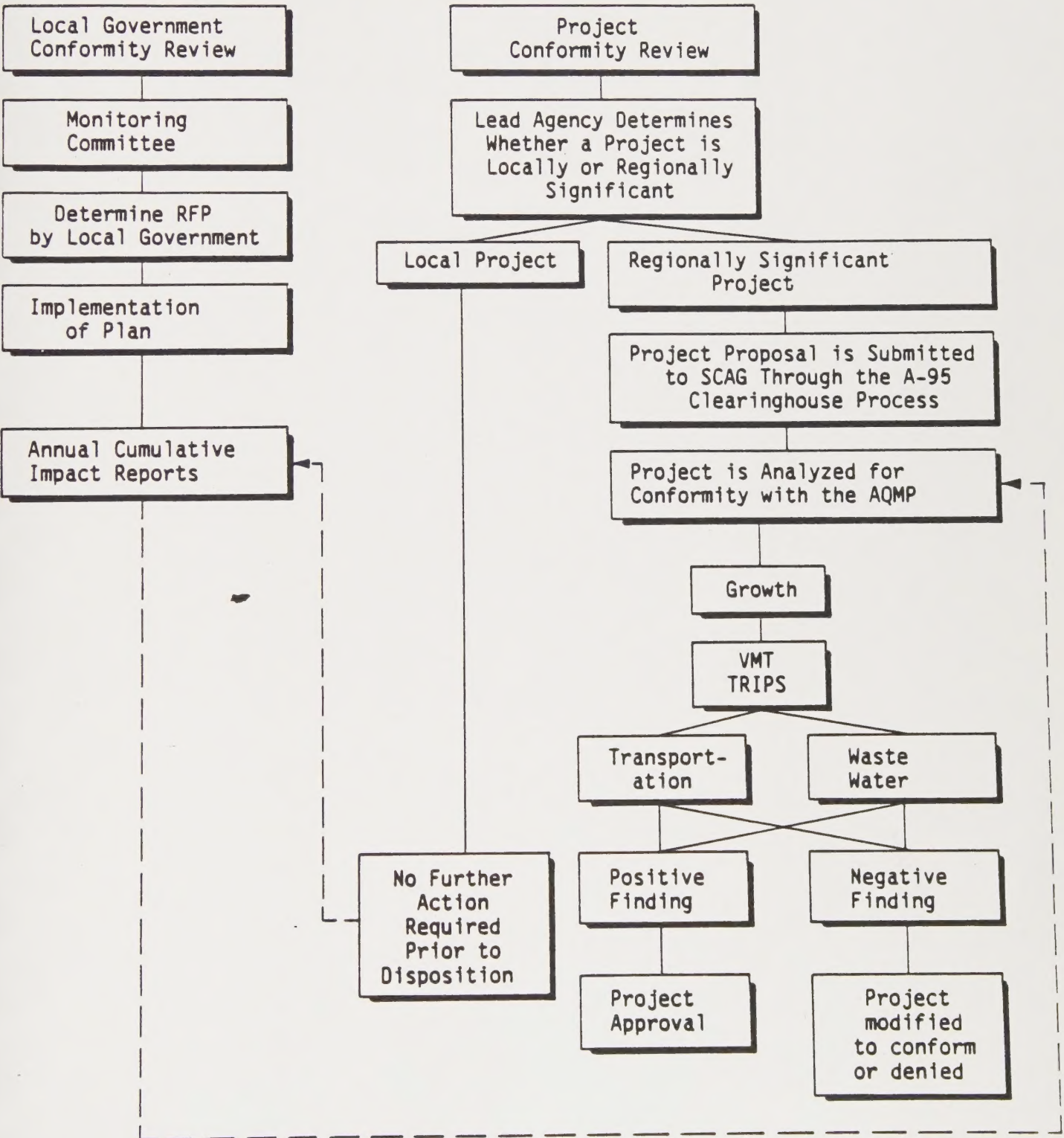
- o In addition to growth, vehicle miles traveled (VMT) and vehicle trips (VT) are used as indicators of conformity;

- o A project is not permitted to induce growth, directly or indirectly beyond the projections in the AQMP;
- o A project is required to mitigate the VMT and VT that correspond with the permitted Baseline growth projections to the level that is assumed with the AQMP's implementation of the transportation control measures;
- o The emphasis is on local government implementation of the AQMP and Lead Agency determination of conformity;
- o The local government must be found to be implementing the AQMP before regional projects can be found to be consistent with the AQMP;
- o Local projects are not evaluated individually to determine conformity because, in order for the jurisdiction to be found implementing the AQMP, ordinances, administrative practices, and General Plan Elements would be adopted to which local projects would conform;
- o The cumulative impacts of local projects would be reviewed through the Cumulative Impact Report submitted by local governments to identify trends, to determine if the growth is within projections, and to determine if local government is implementing the appropriate control measures.

Table 1 presents a flow chart for the growth and development component of the conformity process. As indicated, the lead agency determines whether a project is of local or regional significance, utilizing the criteria established in the A-95 Review Process. Local projects are exempt from conformity analysis as an individual project. However, local projects would be required to be identified in an annual cumulative impact report submitted by the lead agency to SCAG. The cumulative impact report is then evaluated for consistency with the AQMP. Regionally significant projects are submitted to SCAG through the A-95 Clearinghouse Process. The Environmental Impact Reports of these projects would be required to contain an AQMP conformity section which is analyzed by SCAG. SCAG evaluation includes all three components of the process. With a positive conformity finding, the project can be approved for air quality purposes. A negative finding requires that a project must be modified to conform or denied for air quality purposes.

In order to determine if a local government is implementing the AQMP, the Monitoring Committee would establish standards for jurisdictions to achieve. Reasonable Further Progress (RFP) in meeting these standards would be determined by the local government.

TABLE 1
CONFORMITY PROCEDURES
PROCESS
FLOW CHART



U.C. BERKELEY LIBRARIES



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